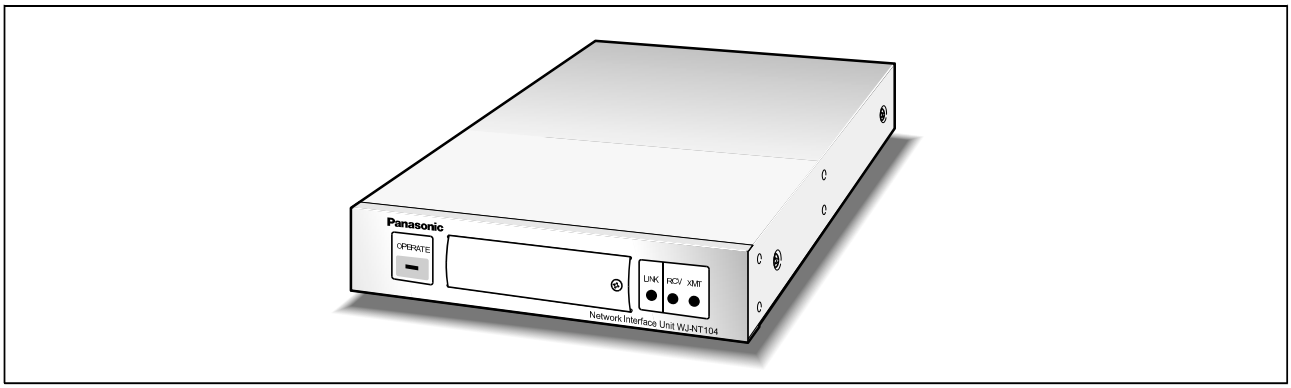
ORDER NO. AVS0106368C8

Service Manual

Network Interface Unit

WJ-NT104



SPECIFICATIONS

General

Power Required:	12 V DC, 800 mA
Ambient Operating Temperature:	–10°C - +50°C (14°F - 122°F)
Ambient Operating Humidity:	Less than 90 %
Dimensions:	210 (W) x 44 (H) x 350 (D) mm 8-1/4” (W) x 1-3/4” (H) x 13-3/4” (D)
Weight:	2.3 kg (5.1 lbs.)

Input and Output

Video Input:	1.0 V[p-p]/75 Ω , PAL Composite Video Signal (x4)
Video Output:	1.0 V[p-p]/75 Ω , PAL Composite Video Signal (x4)
Serial Control Port:	RS-232C (9-pin D-sub Connector), RS-485 (Terminal board)
Parallel Control Port:	Default 8-bit input (I/O selectable for all bits depending on the configuration)
Image Resolution:	Selectable from 752 (H) x 568 (V); 752 (H) x 280 (V); 368 (H) x 280 (V); or 176 (H) x 136 (V)
Image Compression:	JPEG (image quality selectable in 4 stages)
Installed protocol:	HTTP, TCP/IP, PPP, FTP, SMTP
Camera Coaxial Control:	Pan/Tilt, Zoom, Focus, Preset, Auto Focus (for Combination Camera WV-CS850/CS854 Series)
LAN Interface:	10Base-T, 8-conductor Modular Jack
Security measures:	Password type

AC Adapter

Input:	230 AC 50 Hz 17 W
Output:	12 V DC 800 mA

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic

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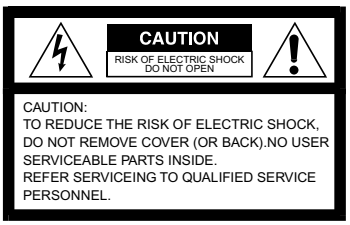
⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.



This symbol warns the user that uninsuland voltage within the unit may have suificient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.

This symbol alerts the user that impotant literature concerning the operation and maintenance of this has been included. Therefore, it should be read carefully in order to avoid any problems.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are indicated by the "⚠" mark on the schematic diagram and the replacement parts list. it is essential that these critical parts should be repleced with manufacture's specified parts to prevent x-radiation, shock, fire, or other hazards. Do not modify the original design without permission of manufacture.

STANDARD ACCESSORIES

AC Adapter 1
Utility Software (FD) 2
Cord Clamp 1
CD-ROM 1

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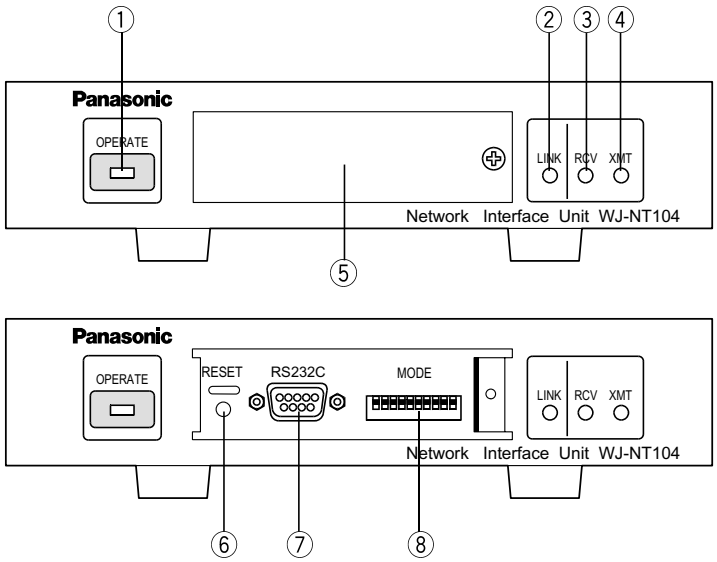
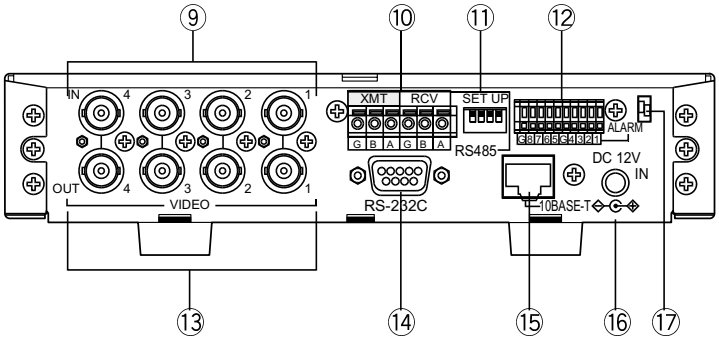
MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS

■ Front View



■ Rear View



① **Operate indicator [OPERATE]**
This indicator is on while the power of the WJ-NT104 is turned on.

② **Link indicator [LINK]**
Lights when the unit is connected to a normally operating network.

③ **Receiving indicator [RCV]**
Blinks when data is received from the network.

④ **Transmitting indicator [XMT]**
Blinks when data is transmitted to the network.

⑤ **Front panel**

⑥ **Reset button [RESET]**
Used to set or change a mode, or to restart.

⑦ **RS-232C port [RS232C]**
Used as an alternative to the RS-232C port ⑭ on the rear panel.

⑧ **Mode selector [MODE]**
Used to set a mode.
Set all the switches to OFF except when setting a mode.

- **SW1**
  To initialize the IP address (IP=192.168.0.10) or other data already set.
  - It takes about 10 seconds after **SW1** is set to **ON** and the **RESET** button is pressed for the data to be initialized.
  - After initializing, set SW1 back to **OFF** and press the **RESET** button again to restart.
- **SW2**
  To return the HTML file, JPEG or other image data stored in the WJ-NT104 to the factory default settings. The IP address and other setup data will not be initialized.
  - It takes a few minutes after **SW2** is set to **ON** and the **RESET** button is pressed for the data to be initialized.
  - After initializing, set **SW2** back to **OFF** and press the **RESET** button again to restart.

  To return all data, including settings and home page, to the factory default settings, set both **SW1** and **SW2** to **ON** and press the **RESET** button.
- **SW3, SW4, SW5, SW6, SW7, SW8, SW10**
  Keep these in the **OFF** position.
- **SW9**
  Selects the RS-232C port (front or rear panel). Setting SW9 to **OFF** selects the rear panel port, setting it to **ON** selects the front panel port.

Switch Positions

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10
To operate	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
To initialize	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

⑨ **Video input connectors [VIDEO IN 1/2/3/4] (BNC)**
Used to connect cameras.

⑩ **RS-485 connectors [XMT/RCV]**
To connect the control data cables of combination cameras (options)

⑪ **RS-485 setup switches [RS485 SETUP]**
Used when combination cameras with an RS-485 interface are connected.

RS-485 mode	SW1	SW2	SW3	SW4
Half Duplex (2 Lines)/termination ON	ON	ON	ON	ON
Full Duplex (4 Lines)/termination ON	ON	OFF	OFF	ON
Half Duplex (2 Lines)/termination OFF	OFF	ON	ON	ON
Full Duplex (4 Lines)/termination OFF	OFF	OFF	ON	ON

⑫ **Alarm input/output port [ALARM]**
To connect an external alarm unit. Input and output can be changed from the ADMINISTRATOR SETUP PAGE.

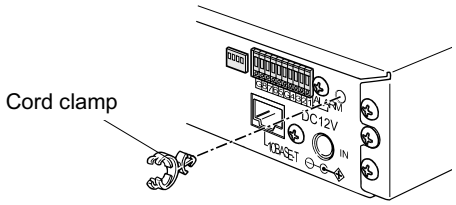
⑬ **Video output connectors [VIDEO OUT 1/2/3/4] (BNC)**
The video signal connected to VIDEO IN is looped through to this connector.

⑭ **RS-232C port [RS-232C]**
To connect a modem or CCTV equipment for controlling the system.

⑮ **Ethernet port [10BASE-T]**
To connect a 10Base-T cable.

⑯ **DC power connector [DC 12V IN]**
To connect the AC adapter (accessory).

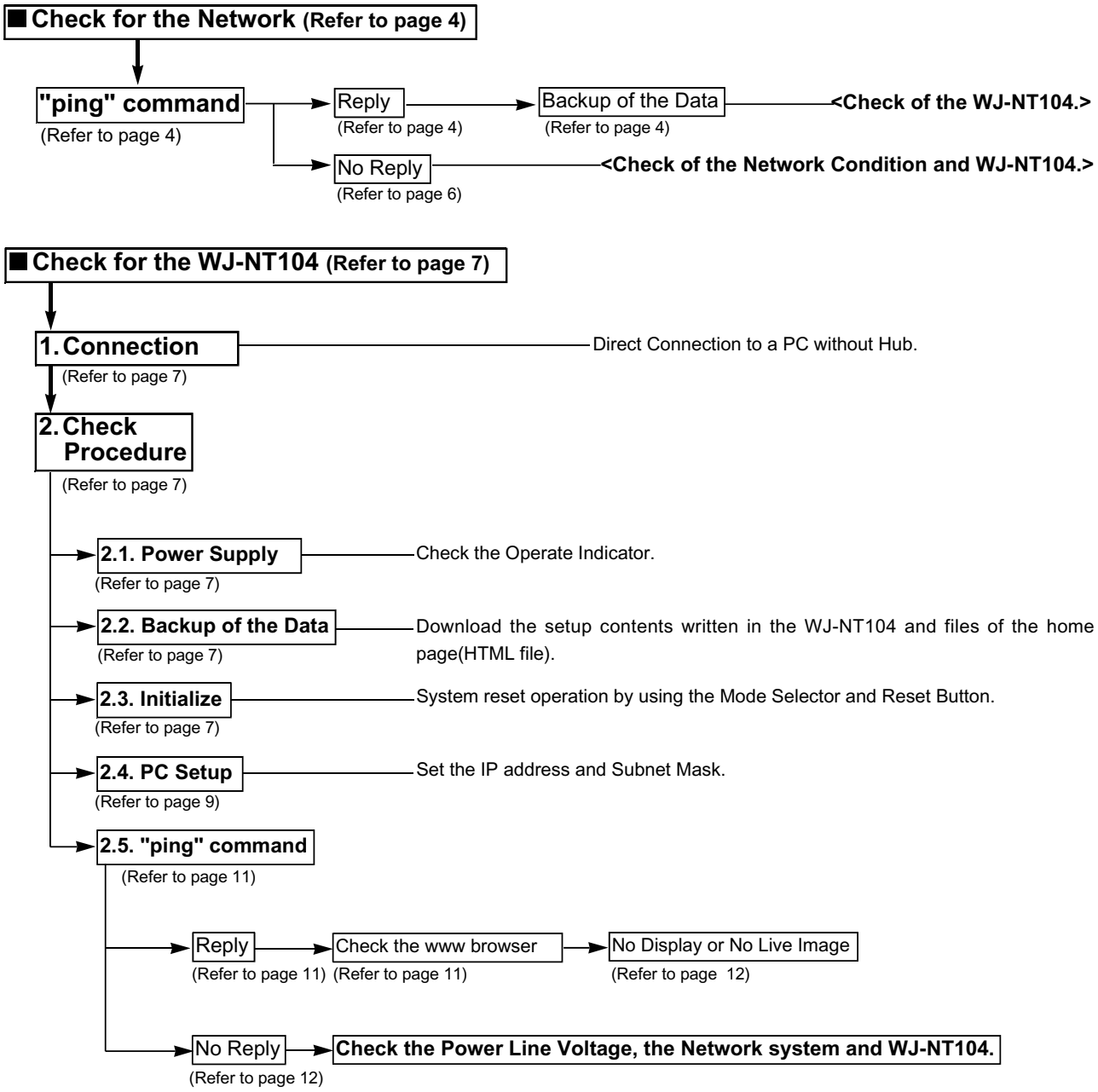
⑰ **Cord clamp (accessory)**
To clamp the cord of the AC adapter (accessory).
Insert the clamp into the hole in the rear panel shown below.



CHECK OUT PROCEDURE

- In this section describe the WJ-NT104 and the Network Check out procedure for easy to find out defective point.

■Outline of Check Out Procedure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(Refer to page 4)
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(Refer to page 4)
Backup of the Data
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2.2. Backup of the Data
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2.4. PC Setup
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2.5. "ping" command
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Reply
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Check the www browser
(Refer to page 11)
No Display or No Live Image
(Refer to page 12)
No Reply
(Refer to page 12)
Check the Power Line Voltage, the Network system and WJ-NT104.

■ Check for the Network

"ping" command

(1) Operate the Network PC by sequence of [**start**], [**MS-DOS Prompt**],and start the MS-DOS Prompt Window.
(2) Check the communication using the "**ping**" command.

C:\WINDOWS>ping XXX.XXX.XXX.XXX

"**ping**" command IP address set in the WJ-NT104

Reply

- Communication of the WJ-NT104 operates correctly if a replay as shown in Table 1 is displayed when the above command is entered.

```
Pinging XXX.XXX.XXX.XXX with 32 bytes of data:

Reply from XXX.XXX.XXX.XXX: bytes=32 time<10ms TTL=255
Reply from XXX.XXX.XXX.XXX: bytes=32 time<10ms TTL=255
Reply from XXX.XXX.XXX.XXX: bytes=32 time<10ms TTL=255
Reply from XXX.XXX.XXX.XXX: bytes=32 time<10ms TTL=255

Ping statistics for XXX.XXX.XXX.XXX:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 3ms, Average = 2ms

C:\WINDOWS>_
```

Table 1

Backup of the Data

- When communicating on the Network, download the setup contents written in the WJ-NT104 and files of the home page (HTML file).

(1) Operate the PC by sequence of [**start**], [**Program**], [**MS-DOS Prompt**], and start the MS-DOS Prompt Window as shown in Table 2.
(2) Make the directory in the free space by using the "**md**" command as shown in Table 2.
(3) Login to the WJ-NT104 by using the "**ftp**" command.

```
Microsoft (R) Windows 95
            (C) Copyright Microsoft Corp 1981-1995
C : \WINDOWS > cd\
C : \> md nt104
C : \> cd \nt104
C : \nt104 > ftp XXX.XXX.XXX.XXX
```

Table 2

C:\nt104 >ftp XXX.XXX.XXX.XXX

"**ftp**" command IP address set in the WJ-NT104

(4) Type the login-name "**admin**" and login to the WJ-NT104 as shown in Table 3.

USER (XXX.XXX.XXX.XXX:(none)): admin

Login-name "**admin**"

```
C : \nt104 > ftp XXX.XXX.XXX.XXX
Connected to XXX.XXX.XXX.XXX
220 herb FTP server (ver. 1.0.2) ready.
User (XXX.XXX.XXX.XXX : (none)): admin
```

Table 3

NOTE) "**admin**" is default login-name.

To page 6

(5) Password is not required, just press the **ENTER** key as shown in Table 4.

```
331 Password required.
Password:
230 Login successful.
ftp > _
```

Press the **ENTER** key

Table 4

(6) Download the backup files to the PC by using the "**get**" command or "**mget**" command as shown in Table 5.

ftp>get index1.html Download the selected file (.html).

or

ftp>mget * Download the all files.

●PC will ask for the following, but just press the **ENTER** key.

mget index.html?

```
ftp > mget *
mget index.html?
200 Command successful.
150 Data connection open.
226 Closing data connection.
294 bytes sent in 0.00 seconds (294000.00 Kbytes/sec)
mget almctrl.html?
200 Command successful.
150 Data connection open
226 Closing data connection.
1677 bytes sent in 0.05 seconds (33.54 Kbytes/sec)
mget almimg.html?
```

Table 5

(7) After completing of the backup, type "**close**", and complete the "ftp" by type "**bye**" as shown in Table 6.

```
mget 1shot.jpg?
200 Command successful.
150 Data connection open.
226 Closing data connection.
ftp : 838 bytes received in 0.00Seconds 838000.00Kbytes/sec.
mget button.jpg?
200 Command successful.
150 Data connection open.
226 Closing data connection.
ftp : 1347 bytes received in 0.05Seconds 26.94Kbytes/sec.
mget multshot.jpg?
200 Command successful.
150 Data connection open.
226 Closing data connection.
ftp : 857 bytes received in 0.06Seconds 14.28Kbytes/sec.
mget nt10logo.jpg?
200 Command successful.
150 Data connection open.
226 Closing data connection.
ftp : 5491 bytes received in 0.22Seconds 24.96Kbytes/sec.
ftp > close
221 Goodbye.
ftp > bye

C : \nt104 >
```

Table 6

(8) To next step. (Refer to page 7, **Check for the WJ-NT104**.)

From page 4

No Reply

- In case the WJ-NT104 gives no reply as shown in Table 7 and 8, the Network Setup of the PC is incorrect. ⇒**Check the PC Setup (IP Address, Subnet Mask etc,.).**

```
Pinging XXX.XXX.XXX.XXX with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for XXX.XXX.XXX.XXX
        Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\nt104>_
```

Table 7

```
Pinging XXX.XXX.XXX.XXX with 32 bytes of data:

Destination host unreachable.
Destination host unreachable.
Destination host unreachable.
Destination host unreachable.

Ping statistics for XXX.XXX.XXX.XXX
        Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\nt104>_
```

Table 8

- In case the Link Indicator on the Front Panel does not light, the Network is incorrect. ⇒**Check the Network Condition.**
- In case the Receiving Indicator on the Front Panel does not blink, the Network Cable has problem. ⇒**Check the Network Cable.**
- In case the Receiving Indicator and Transmitting Indicator on the Front Panel do not blink, the Network Setup of the PC is incorrect. ⇒**Check the PC Setup (IP Address, Subnet Mask etc,.).**

■ Check for the WJ-NT104

1. Connection

The figure below shows how the WJ-NT104 can be connected directly to a PC for testing before it is connected directly to a network. The connection can also be made via a hub.

● **Direct Connection to a PC without Hub**

Connect the 10Base-T port on the PC to the Ethernet port on the WJ-NT104 with a crossover cable.

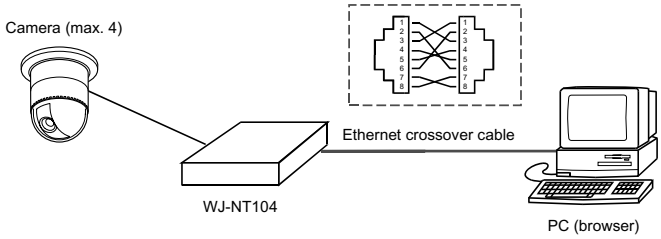

Fig. 1

● **Connection to a Client PC via Hub**

Connect the 10Base-T port on the PC to the Ethernet port on the WJ-NT104 with straight cables via a hub.

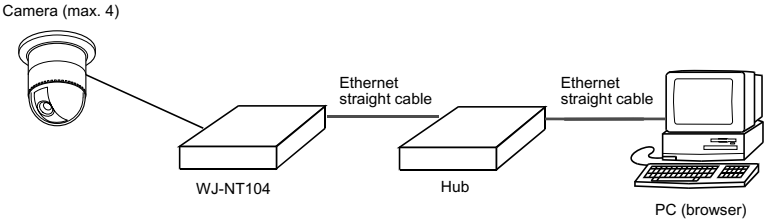

Fig. 2

2. Check Procedure

2.1. Power Supply

- Confirm that the Operate Indicator on the Front Panel is lit.

2.2. Backup of the Data

- Refer to page 4, Backup of the Data.

2.3. Initialize

- Initialize the WJ-NT104.
  NOTE) When the WJ-NT104 is initialized, the Backup Data is returned to the factory default settings.

(1) Referring to Fig. 3, remove one screw that secure the Front Panel and remove the Front Panel.
(2) Referring to Fig. 3, remove eight screws that secure the Upper Cover and remove the Upper Cover in the direction of the arrow.
(3) Set the 1 and 2 of the Mode Selector to ON position and 3 to 10 of the Mode Selector to OFF position as shown in Fig. 4.

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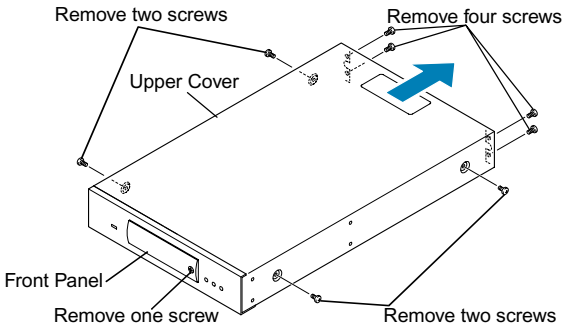

Fig. 3

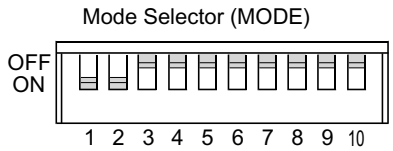

Fig. 4

(4) Press the Reset Button for system reset operation.

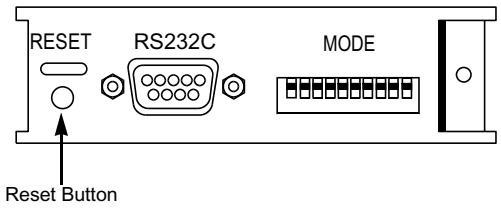

Fig. 5

(5)After a few minute waiting, confirm the LED (D1 and D2)on the Main Board light up. (System reset is completed.)
NOTE) The system or software has problem.

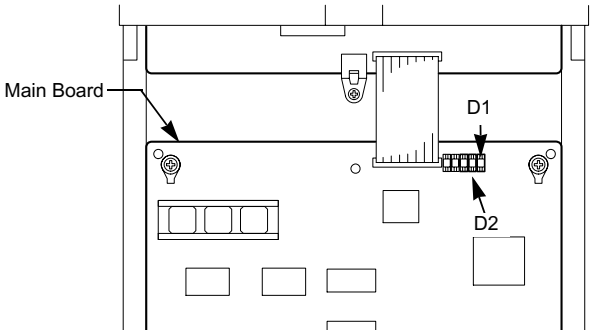

Fig. 6

(6) Set the 1 and 2 of the Mode Selector to OFF position as shown in Fig. 7.

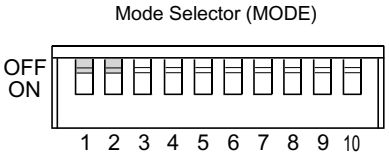

Fig. 7

(7) Press the Reset Button.
(8) Initialization is completed.
(9) Reboot the PC.

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2.4. PC Setup

The factory default settings of the WJ-NT104 are as follows:

IP address	192.168.0.10
Subnet Mask	255.255.255.0
Default gateway	192.168.0.1

For a client PC to access WJ-NT104 factory default settings, set the IP address of the PC to 192.168.0.XX (XX means any number from 2 to 254 except 10).

① Connect the WJ-NT104 to the PC.

② Change the PC's **TCP/IP** to match the factory default settings of the WJ-NT104.

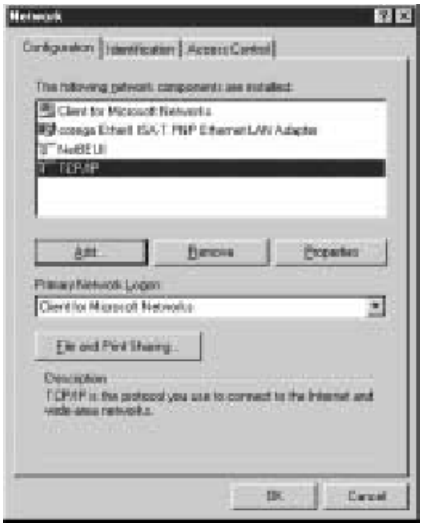

Table 9

If your PC's OS is Windows95 or Windows98, proceed as follows:

(1) Click the **Start** button, point to **settings**, and then click **Control Panel**.

(2) Double-click **Network**.

(3) In the **Network** dialog box, click the **Configuration** tab.

(4) Choose **TCP/IP**, and then click the **[Properties]** button to display the **TCP/IP Properties** dialog box.

(5) Specify an IP address as follows:
IP Address: 192.168.0.9
Subnet Mask: 255.255.255.0

③ Restart the PC.
Start the WWW browser, and select **[Do not use proxy for address 192.168.0.10]**.

Table 10

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If your browser is Netscape Navigator, proceed as follows:

(1) Click the **Edit** menu, and then click **Preferences**.

(2) In the **Preferences** dialog box, click **Advanced**, and then click **Proxies**.

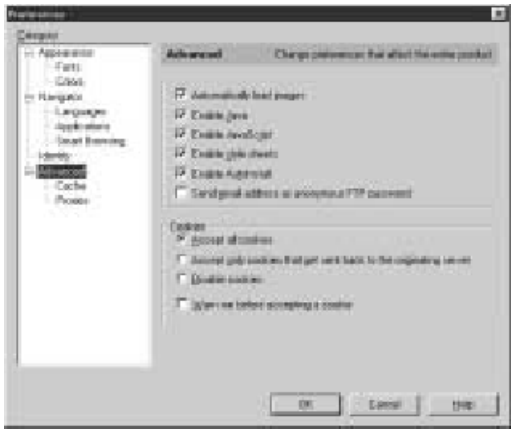

Table 11

(3) Select the **Manual proxy configuration** option, and then click the **[View]** button to display the **Manual Proxy Configuration** dialog box.

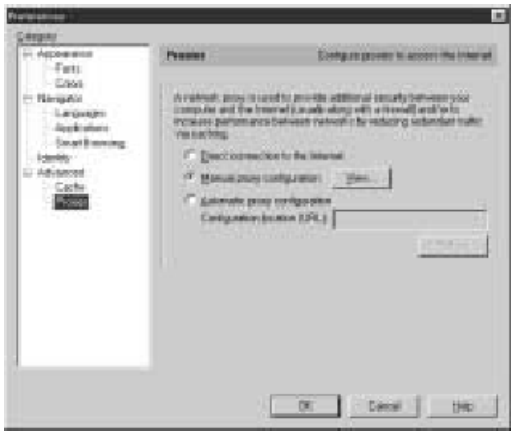

Table 12

(4) In the space **[Do not use proxy servers for domains beginning with:]**, specify 192.168.0.10.

Table 13

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④ In the **Location** bar, specify http://192.168.0.10.

⑤ The browser displays the **MAIN PAGE** of the WJ-NT104's home page. If there is a camera input, it also displays the camera image.

⑥ Click [button] on the home page and verify the functions of the WJ-NT104.

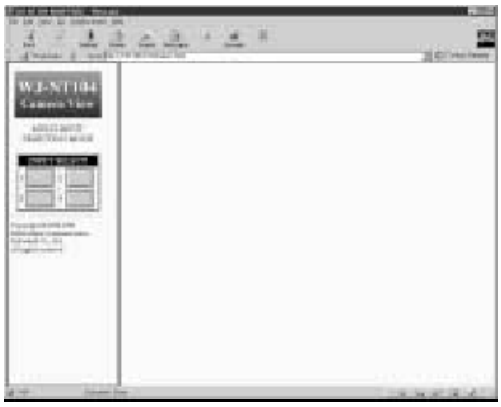


Table 14

2-5."ping" command

- Operate the PC by the sequence of [**start**], [**Program**], [**MS-DOS Prompt**],and start the MS-DOS Prompt Window.

C:\WINDOWS>ping 192.168.0.10

"**ping**" command IP address set in the WJ-NT104

Reply

- The WJ-NT104 gives a reply when the above command is entered as shown in Table 15 will be displayed, Communication of the WJ-NT104 operates correctly if a replay as shown in Table 1 is displayed when the above command is entered.

```
Microsoft (R) Windows 98
        (C) Copyright Microsoft Corp 1981-1998.

C : \WINDOWS > ping 192.168.0.10

pinging 192.168.0.10 with 32 bytes of data:

Reply from 192.168.0.10 : bytes=32 time=5ms TTL=255
Reply from 192.168.0.10 : bytes=32 time=3ms TTL=255
Reply from 192.168.0.10 : bytes=32 time=3ms TTL=255
Reply from 192.168.0.10 : bytes=32 time=3ms TTL=255

Ping statistics for 192.168.0.10 :
        Packets : Sent = 4, Received = 4, Lost = 0 (0% loss)
Approximate round trip times in milli-seconds :
        Minimum = 3ms, Maximum = 5ms, Average = 3ms

C : \WINDOWS >
```

Table 15

Check the www browser

- Start the www browser of the PC, in the **Location** bar, specify type "**http://192.168.0.10**".
- The browser displays the WJ-NT104's home page.

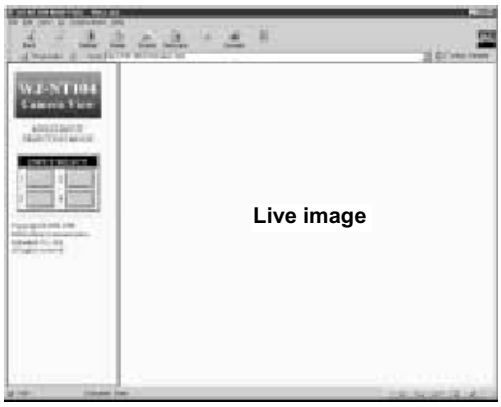


Table 16

To page 12

From page 11

No Display

- In case there is no display as shown in Table 17, check the [Do not use proxy for address 192.168.0.10] of the browser.
- If it is correct, check the Video signal circuit of the Main Board.

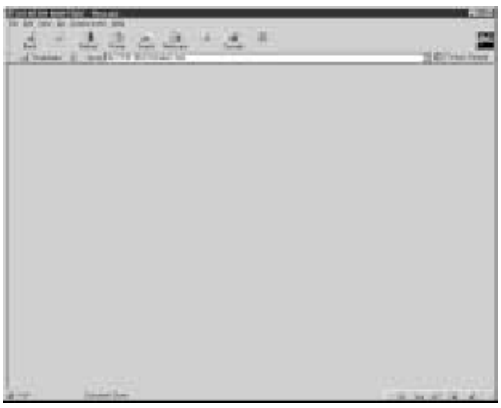


Table 17

No Live Image

- In case the Live Image is not displayed as shown in Table 18, check the connection of the Camera Cable and Channel Settings.
- If it is correct, check the Video signal circuit of the Main Board.

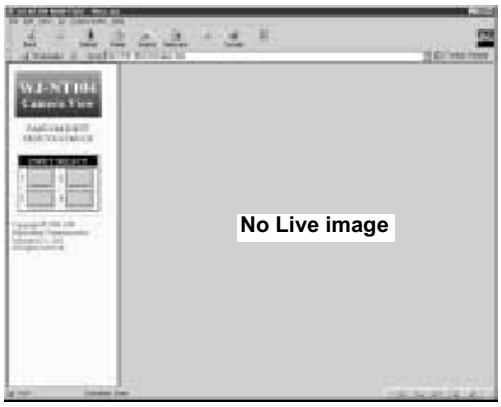


Table 18

No Reply

- Confirm that the DC voltage of the each point obtain its reference voltage as follows.
  (1) Pin 1 of the IC304 on the Main Board is +9.0V.
  (2) Pin 1 of the IC303 on the Main Board is +5.0V for Digital Circuit.
  (3) Pin 2 of the IC304 on the Main Board is +5.0V for Analog Circuit.
  (4) Pin 2 of the IC303 on the Main Board is +3.3V.
- If these voltages are not correct, check the DC Power of the WJ-NT104.

PRINTED CIRCUIT BOARD ASS'Y REPLACEMENT PROCEDURE

- Before replacing the Printed Circuit Board Ass'y,save the data.(⇒Refer to page 4, **Backup of the Data**)

(1)Referring to Fig. 8, remove eight screws that secure the Upper Cover and remove the Upper Cover in the direction of the arrow.

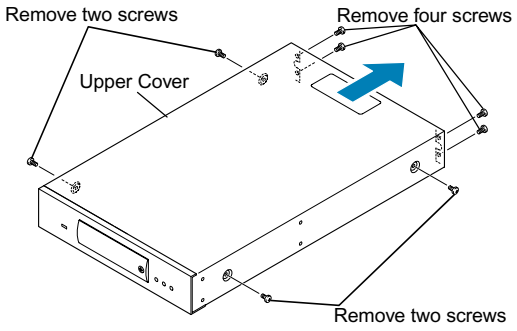


Fig. 8

(2)Referring to Fig. 9, remove two screws that secure the Rear Board Ass'y.

(3)Referring to Fig. 9 disconnect the CN503 on the Main Board Ass'y in the direction of the arrow-1 and remove the Rear Board Ass'y in the direction of the arrow-2.

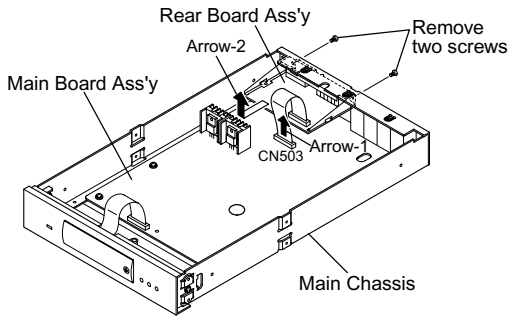


Fig. 9

(4) Referring to Fig. 10, remove twelve screws and two special screws that secure the Main Board Ass'y.

(5) Referring to Fig. 10, disconnect the CN16 on the Main Board Ass'y in the direction of the arrow-3 and remove the Main Board Ass'y in the direction of the arrow-4.

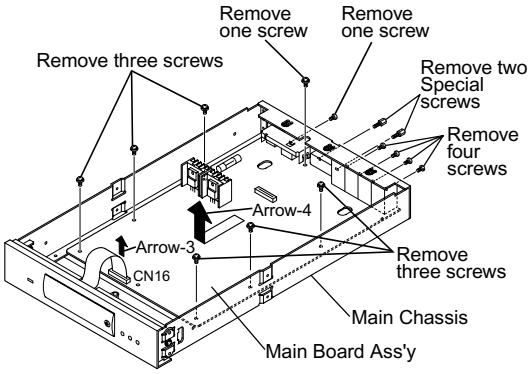


Fig. 10

(6) Replace the Main Board Ass'y with new one.

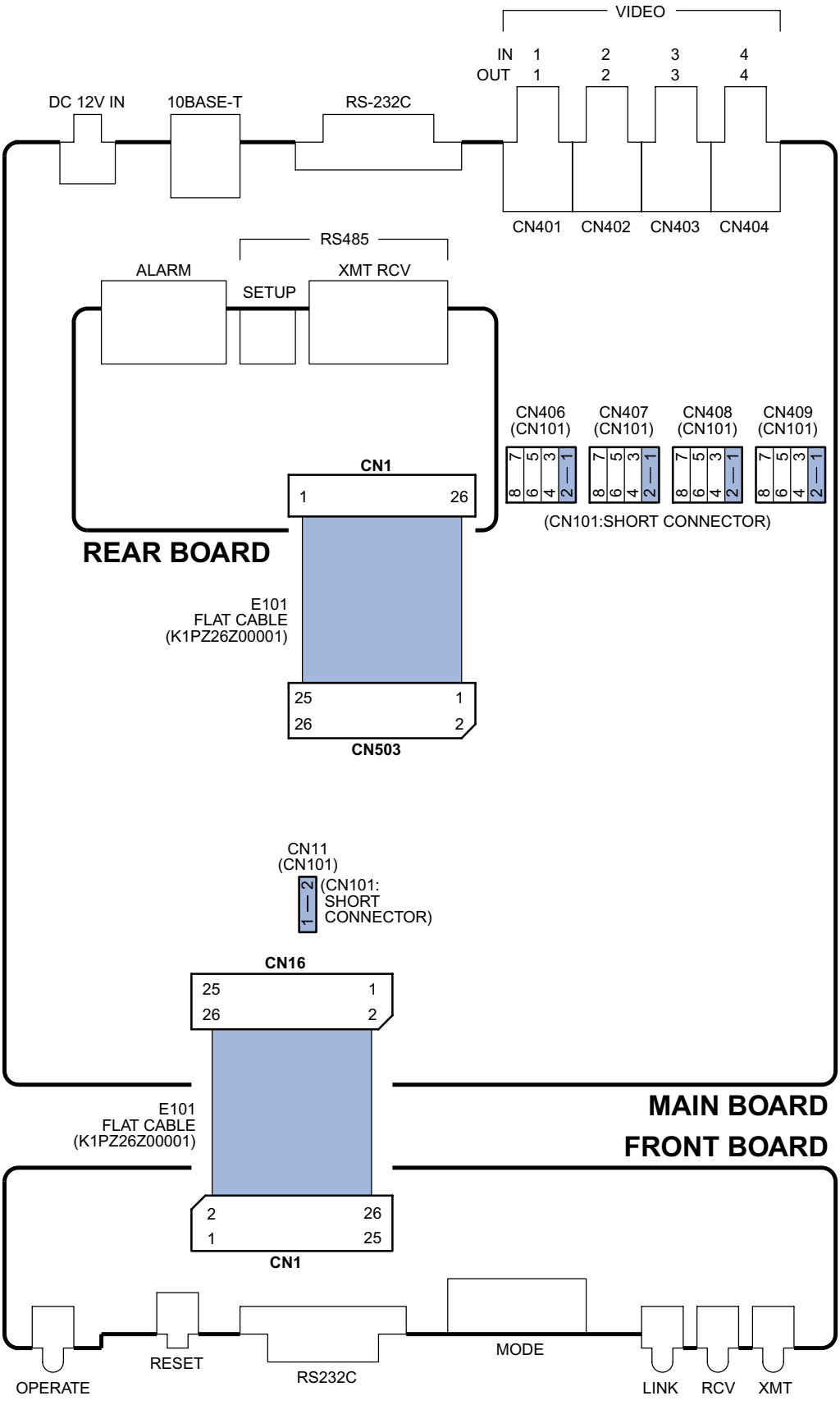
SETUP AFTER REPLACING THE PRINTED CIRCUIT BOARD ASS'Y

(1) Connect the AC Adapter to the WJ-NT104.
- Confirm the Operate Indicator on the Front Panel is lit on.

(2) Initialize the WJ-NT104.(⇒Refer to page 7, **2.3. Initialize**)

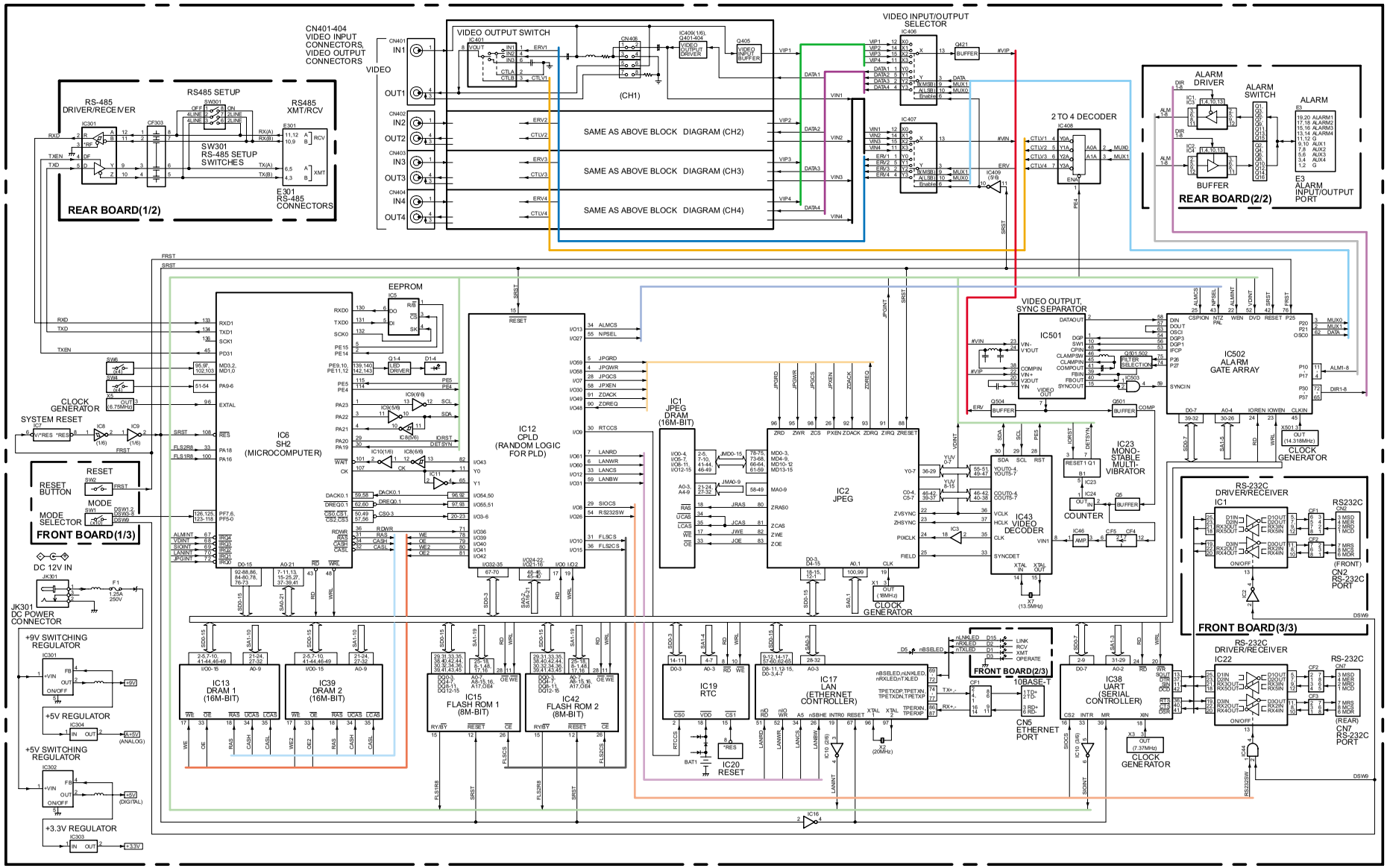
(3) After replacing the Printed Circuit Board Ass'y , transfer backup data files to the WJ-NT104.
- Operate the PC by sequence of [**Start**], [**Program**], [**MS-DOS Window**], and start the MS-DOS prompt window.
- Login to the WJ-NT104 by using the "**ftp**" command.
  C:\WINDOWS>ftp 192.168.0.10
- Type the Login-name "**admin**" and Login to the WJ-NT104.
- Password is not required, just press the **ENTER** key.
- Transfer the backup data files to the WJ-NT104 by using the "**put**" command or "**mput**" command.
  ftp>put index1.html ⇒Transfer the selected file.
  or
  ftp>mput *⇒ Transfer the all files.
- After completing of the transfer, type "**close**", and complete the "**ftp**" by type "**bye**".

WIRING DIAGRAM



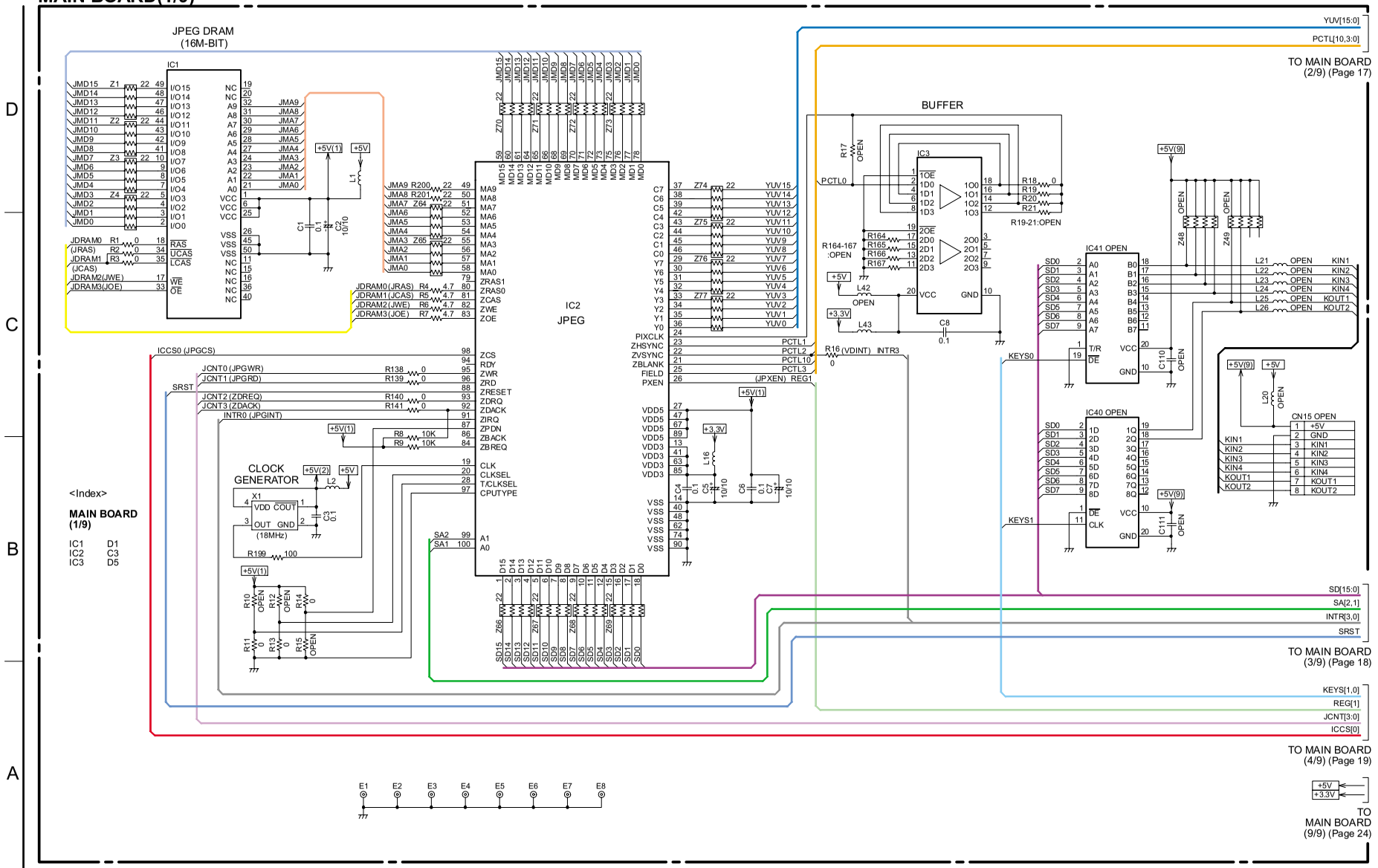
OVERALL BLOCK DIAGRAM

MAIN BOARD



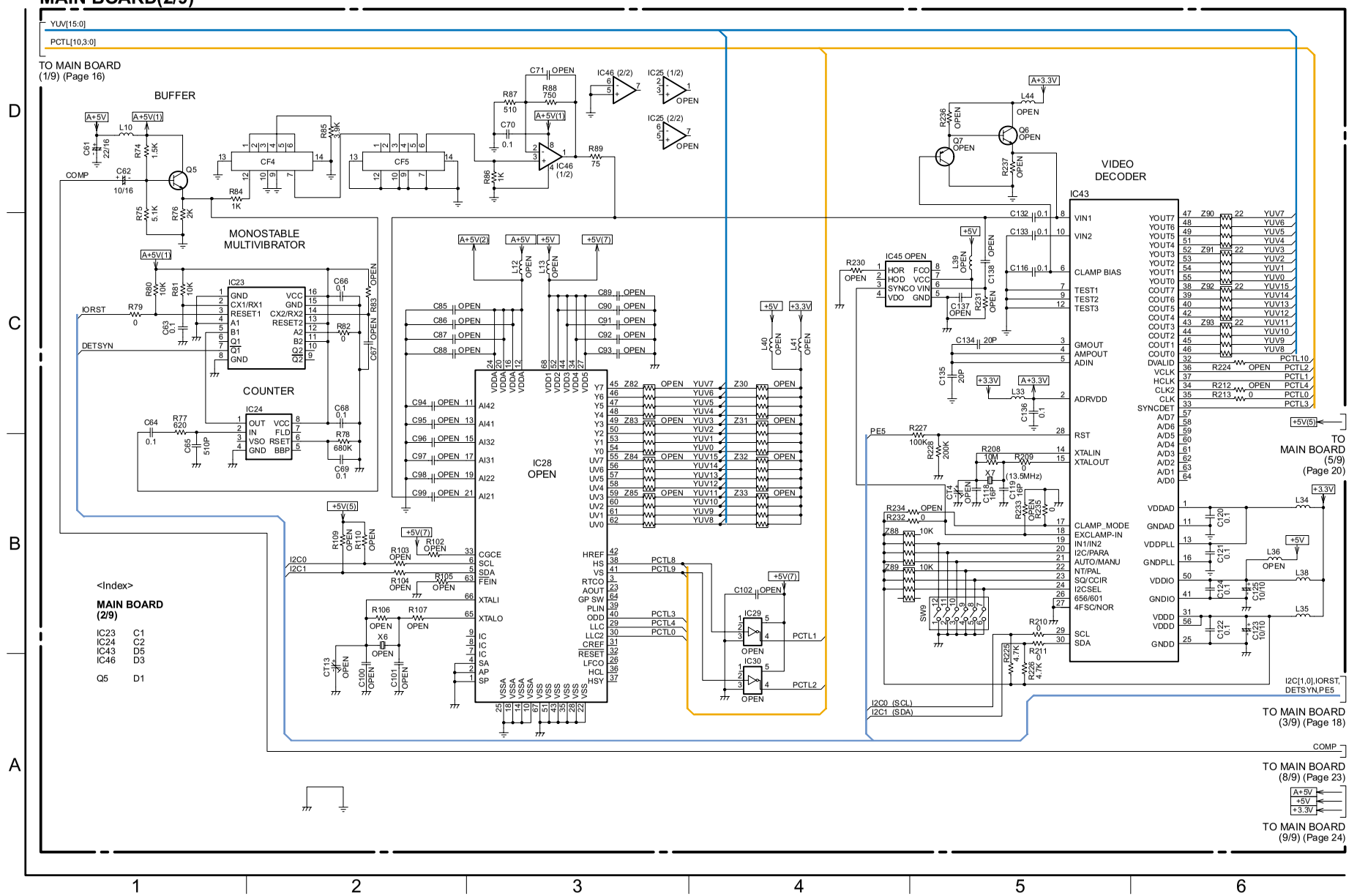
SCHEMATIC DIAGRAM OF MAIN BOARD (1/9)

MAIN BOARD(1/9)



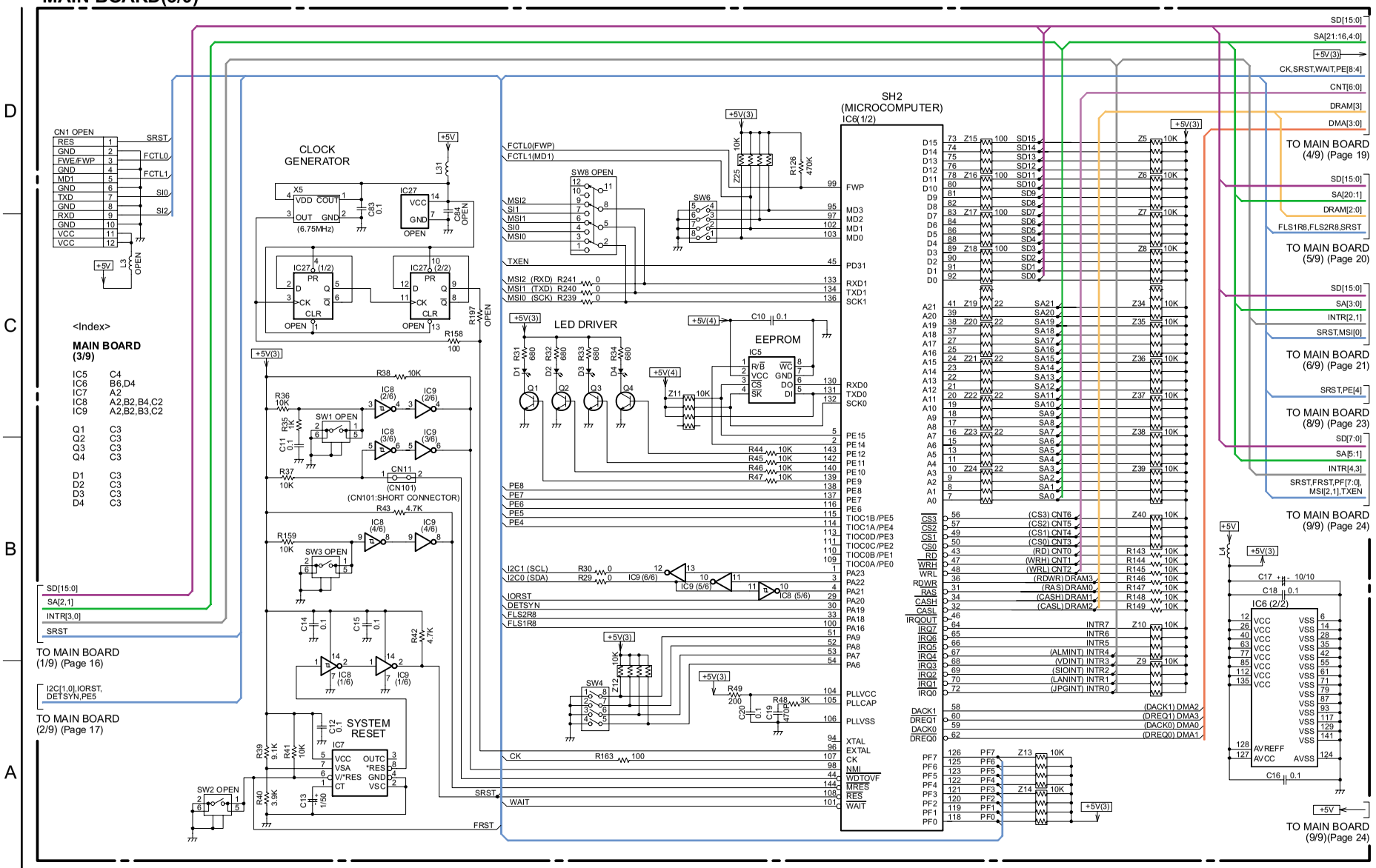
SCHEMATIC DIAGRAM OF MAIN BOARD (2/9)

MAIN BOARD(2/9)



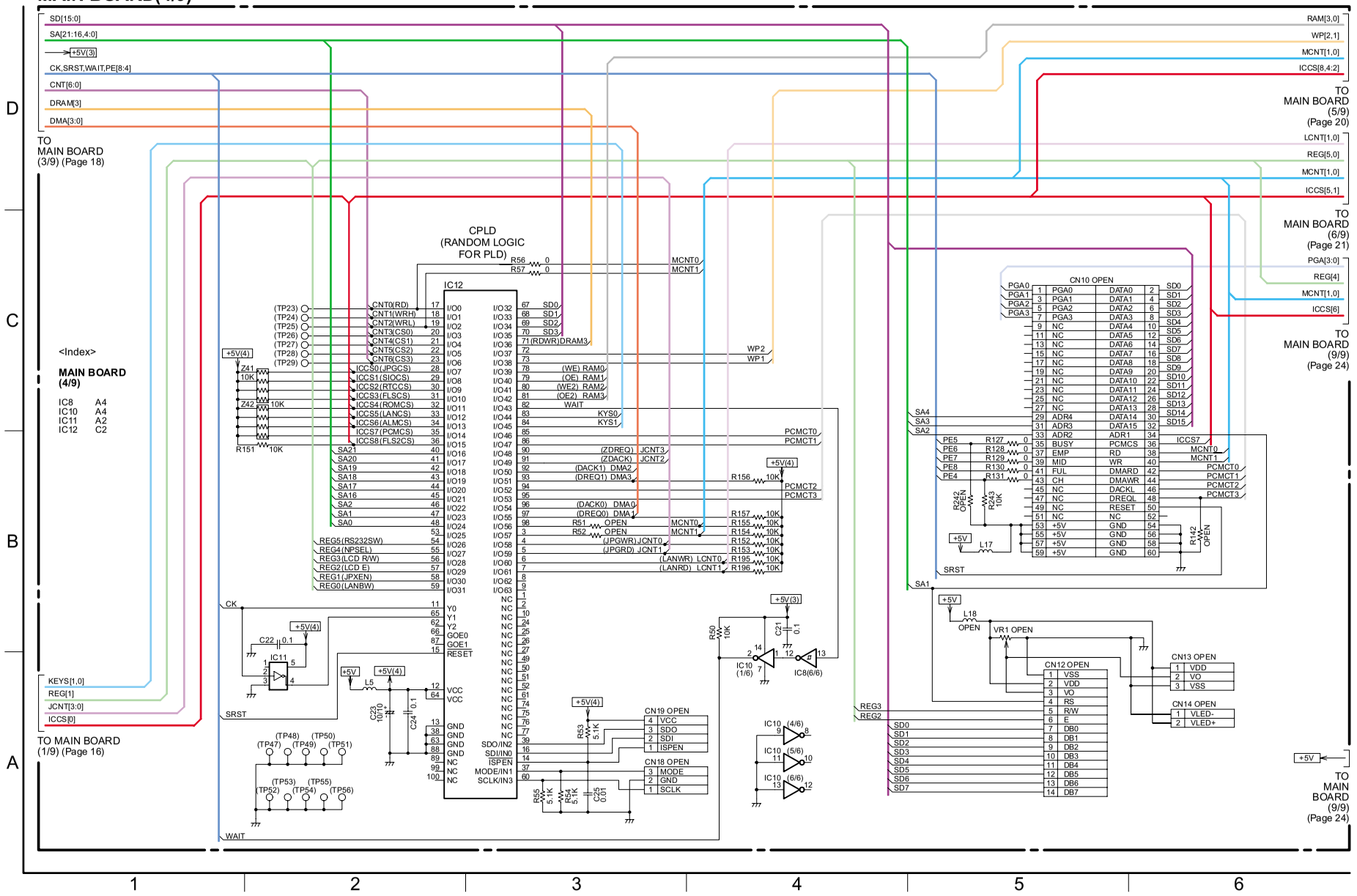
SCHEMATIC DIAGRAM OF MAIN BOARD (3/9)

MAIN BOARD(3/9)



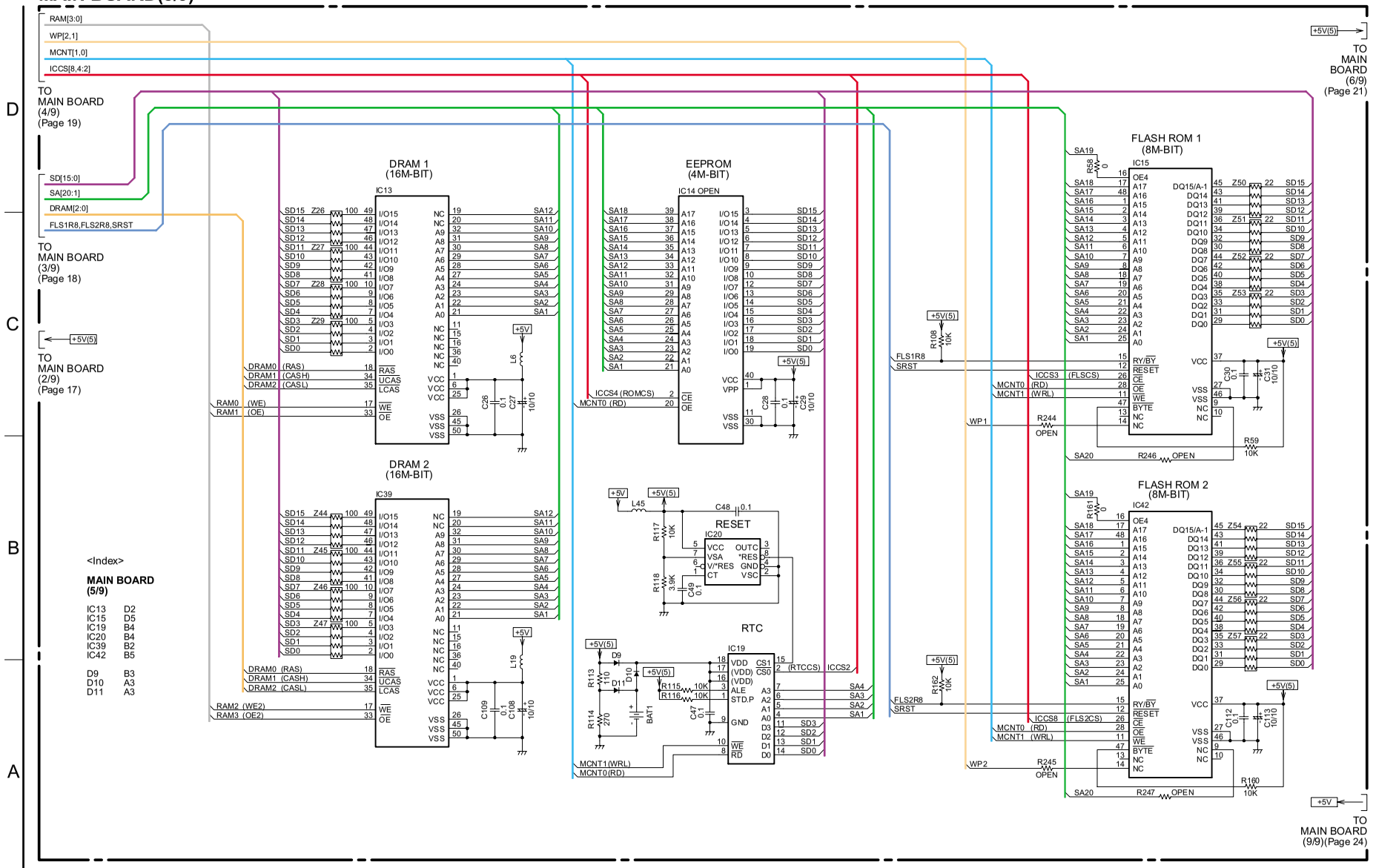
SCHEMATIC DIAGRAM OF MAIN BOARD (4/9)

MAIN BOARD(4/9)



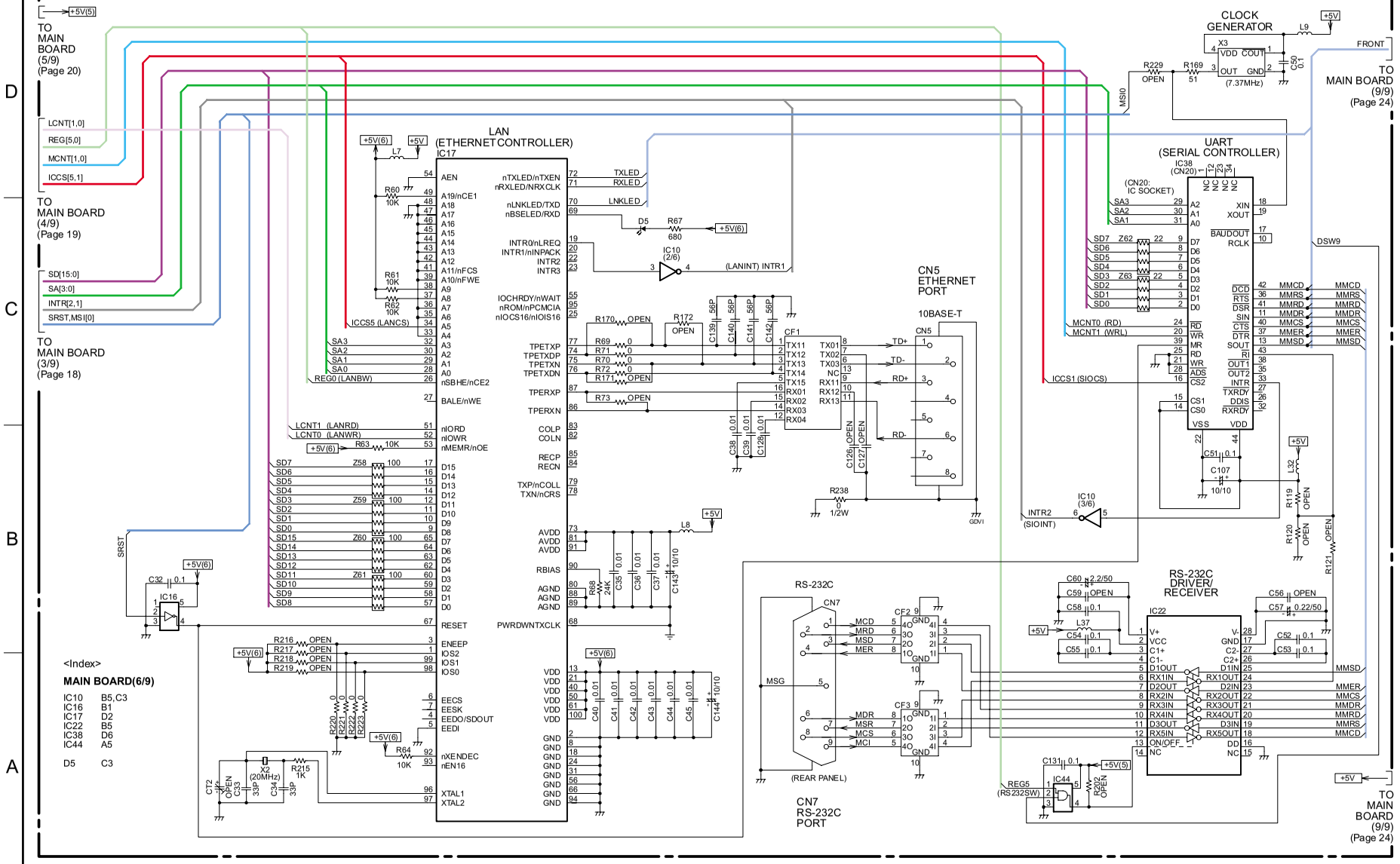
SCHEMATIC DIAGRAM OF MAIN BOARD (5/9)

MAIN BOARD(5/9)



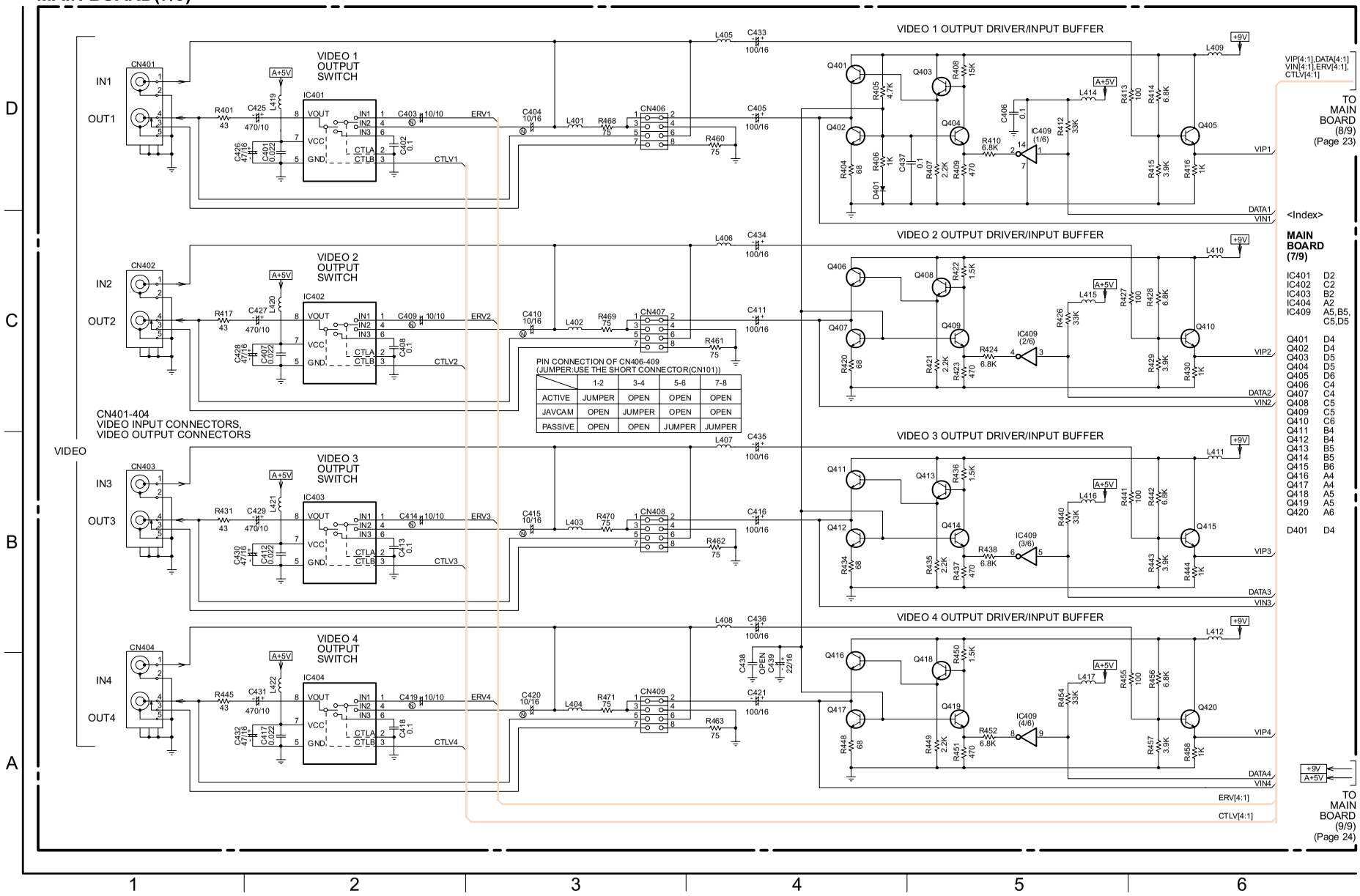
SCHEMATIC DIAGRAM OF MAIN BOARD (6/9)

MAIN BOARD(6/9)



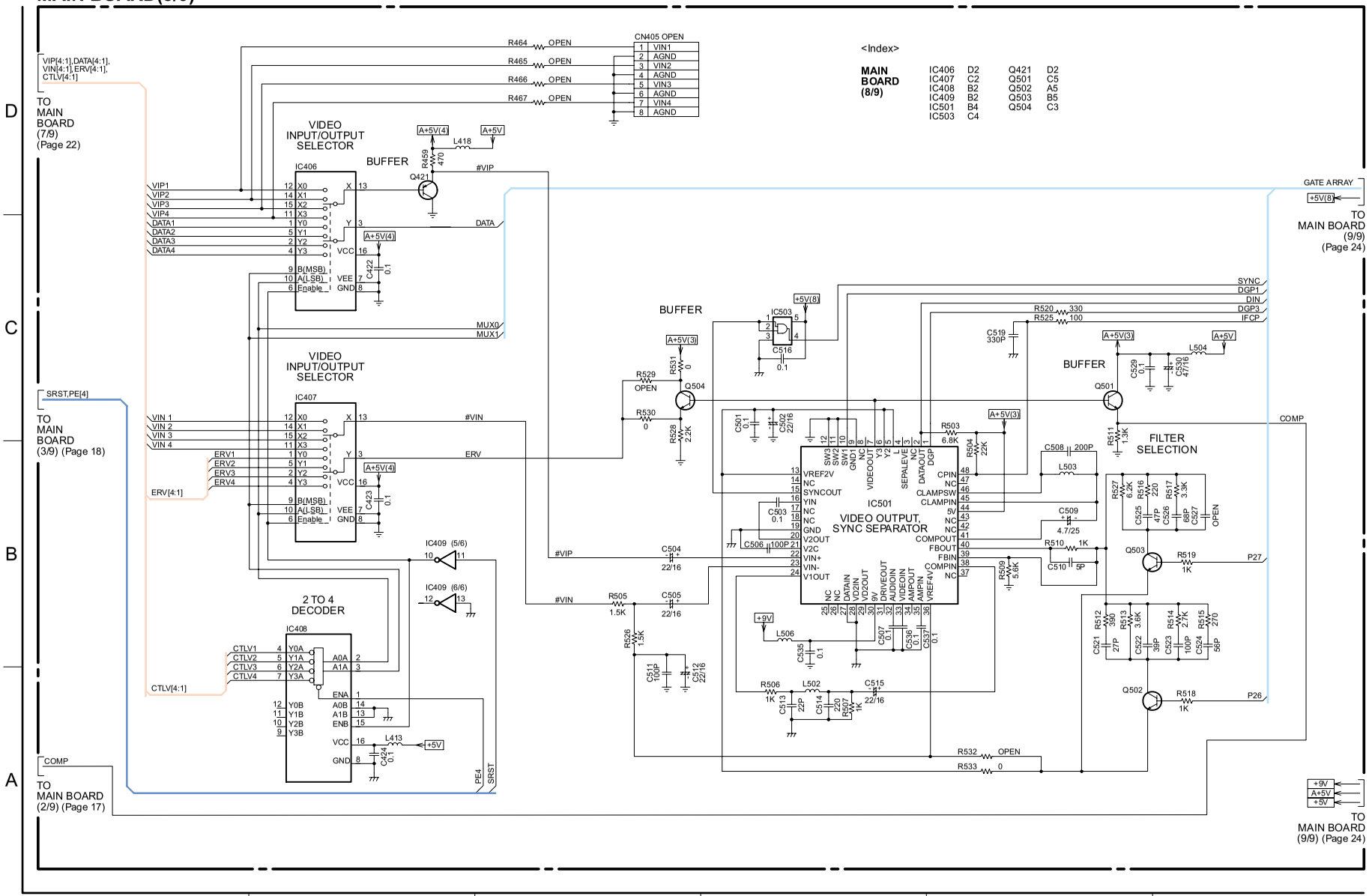
SCHEMATIC DIAGRAM OF MAIN BOARD (7/9)

MAIN BOARD(7/9)



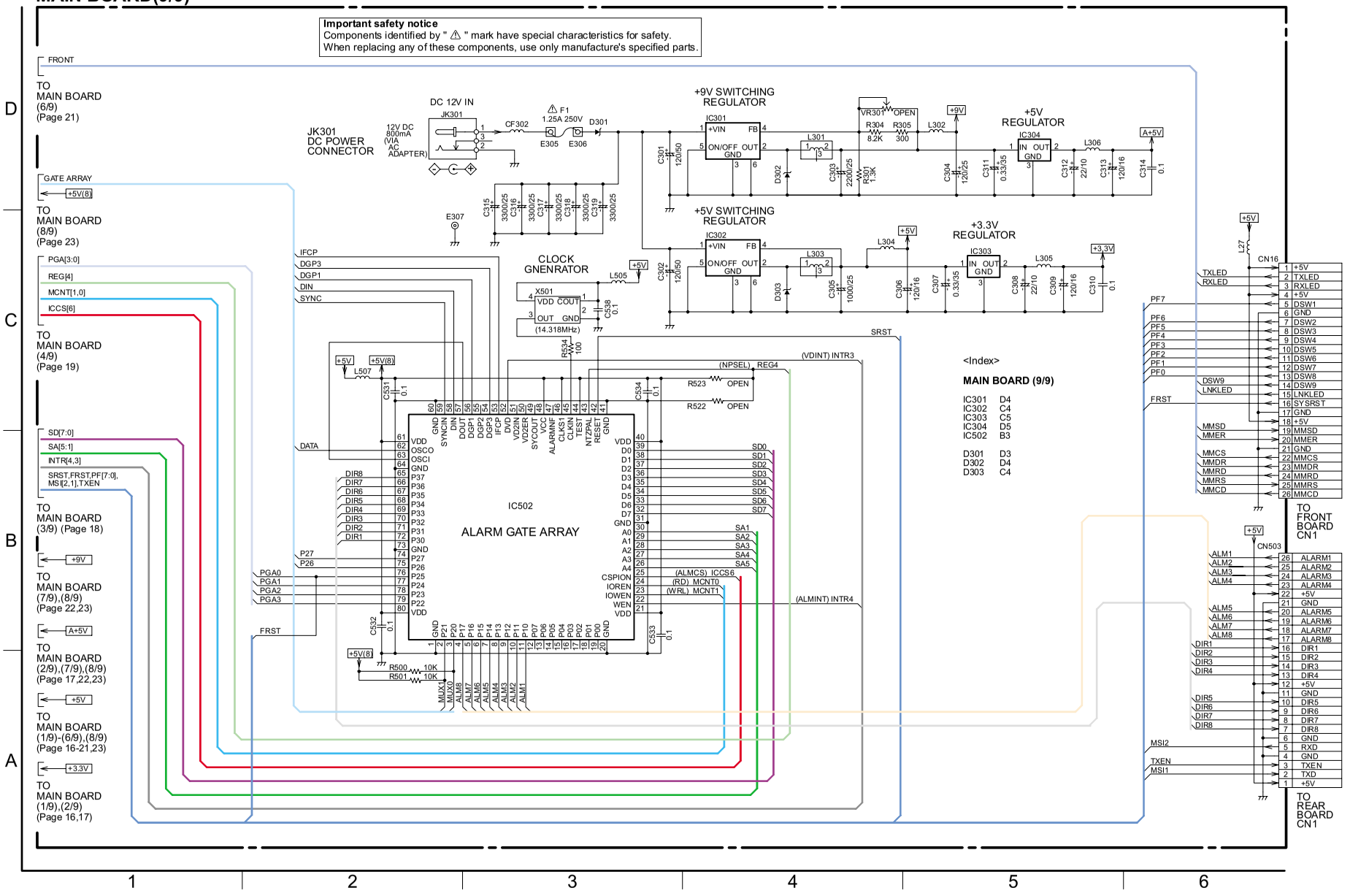
SCHEMATIC DIAGRAM OF MAIN BOARD (8/9)

MAIN BOARD(8/9)



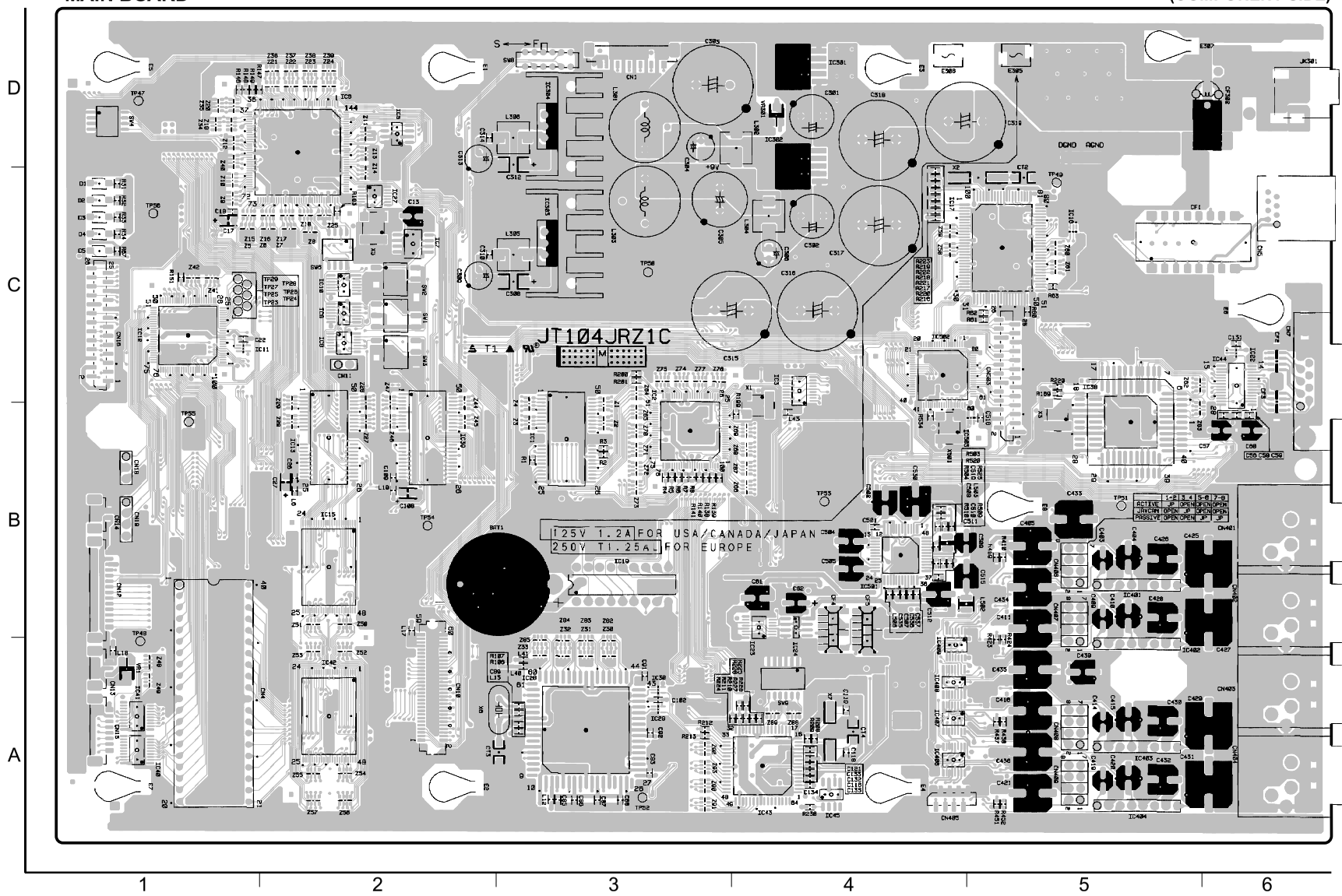
SCHEMATIC DIAGRAM OF MAIN BOARD (9/9)

MAIN BOARD(9/9)



CONDUCTOR VIEW OF MAIN BOARD (COMPONENT SIDE)

MAIN BOARD **(COMPONENT SIDE)**



<Index>

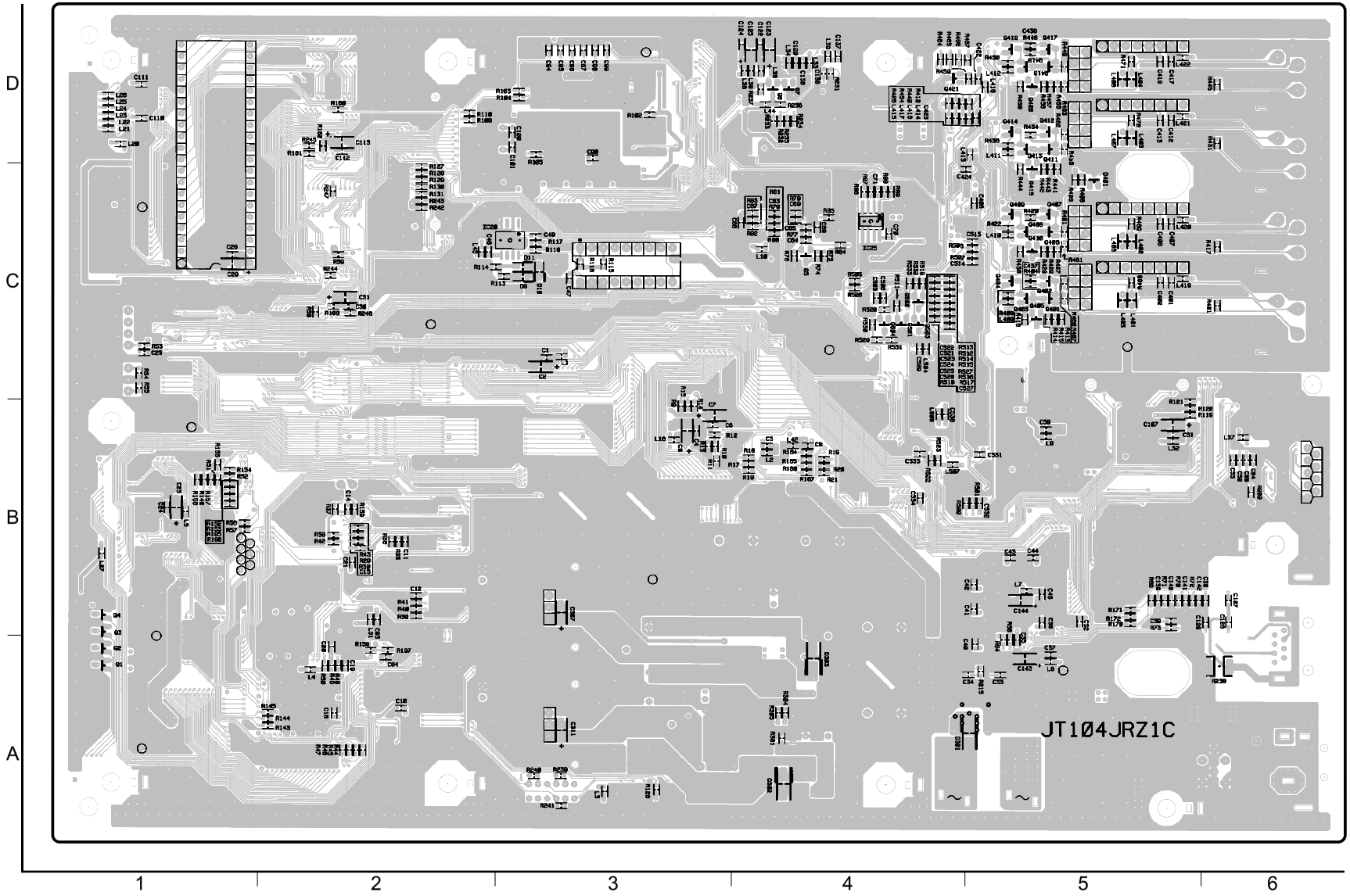
MAIN BOARD (COMPONENT SIDE)

IC1 B3
IC2 C3
IC3 C4
IC5 D2
IC6 D2
IC7 C2
IC8 C2
IC9 C2
IC10 C2
IC11 C1
IC12 C1
IC13 B2
IC15 B2
IC16 C5
IC17 C4
IC19 B3
IC22 C6
IC23 A4
IC24 A4
IC38 C5
IC39 B2
IC42 A2
IC43 A4
IC44 C6
IC301 D4
IC302 D4
IC303 C3
IC304 D3
IC401 B5
IC402 A5
IC403 A5
IC404 A5
IC406 A4
IC407 A4
IC408 A4
IC409 A4
IC501 B4
IC502 C4
IC503 B4

D1 C1
D2 C1
D3 C1
D4 C1
D5 C1

CONDUCTOR VIEW OF MAIN BOARD (PATTERN SIDE)

MAIN BOARD **(PATTERN SIDE)**



<Index>

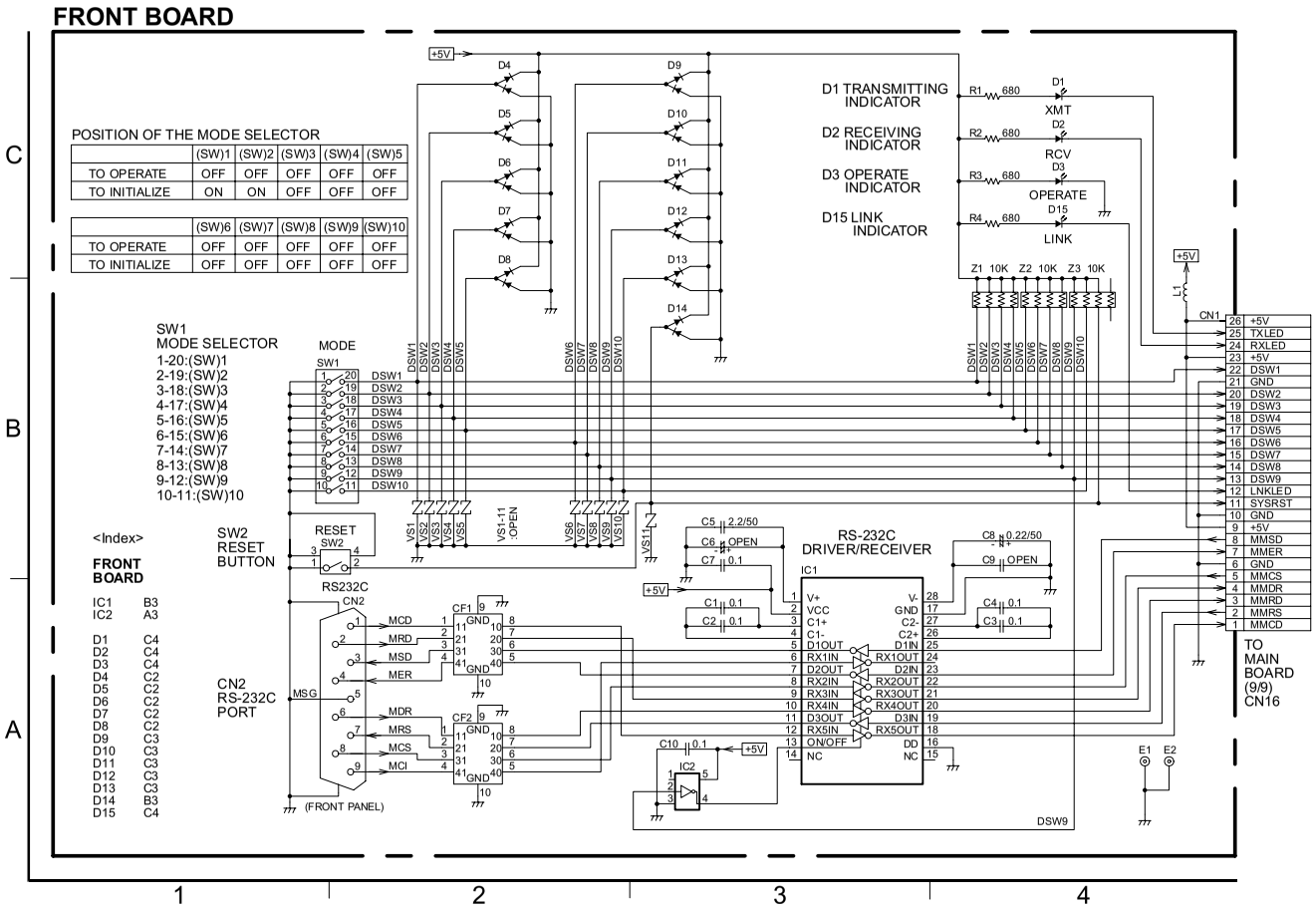
MAIN BOARD (PATTERN SIDE)

IC20 C2
IC25 C4

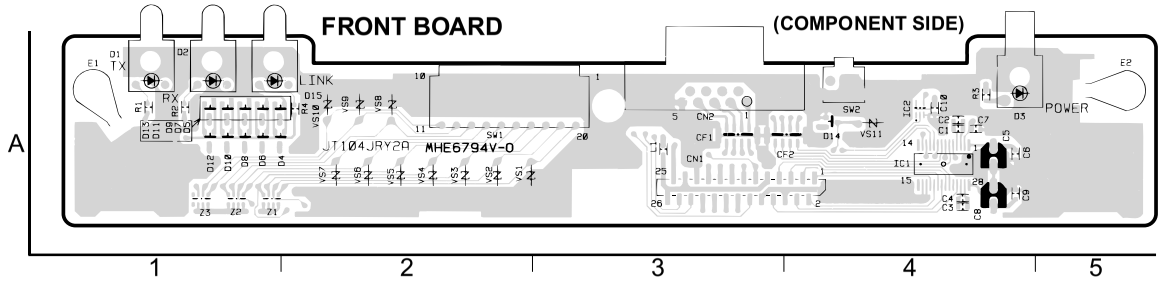
Q1 A1
Q2 A1
Q3 B1
Q4 B1
Q5 C4
Q401 C5
Q402 C5
Q403 C5
Q404 C5
Q405 C5
Q406 C5
Q407 C5
Q408 C5
Q409 C5
Q410 C5
Q411 D5
Q412 D5
Q413 D5
Q414 D5
Q415 C5
Q416 D5
Q417 D5
Q418 D5
Q419 D5
Q420 D5
Q421 C4
Q501 C4
Q502 C4
Q503 C4
Q504 C4

D9 C3
D10 C3
D11 C3
D301 A4
D302 A4
D303 A4
D401 C5

SCHEMATIC DIAGRAM OF FRONT BOARD



CONDUCTOR VIEW OF FRONT BOARD



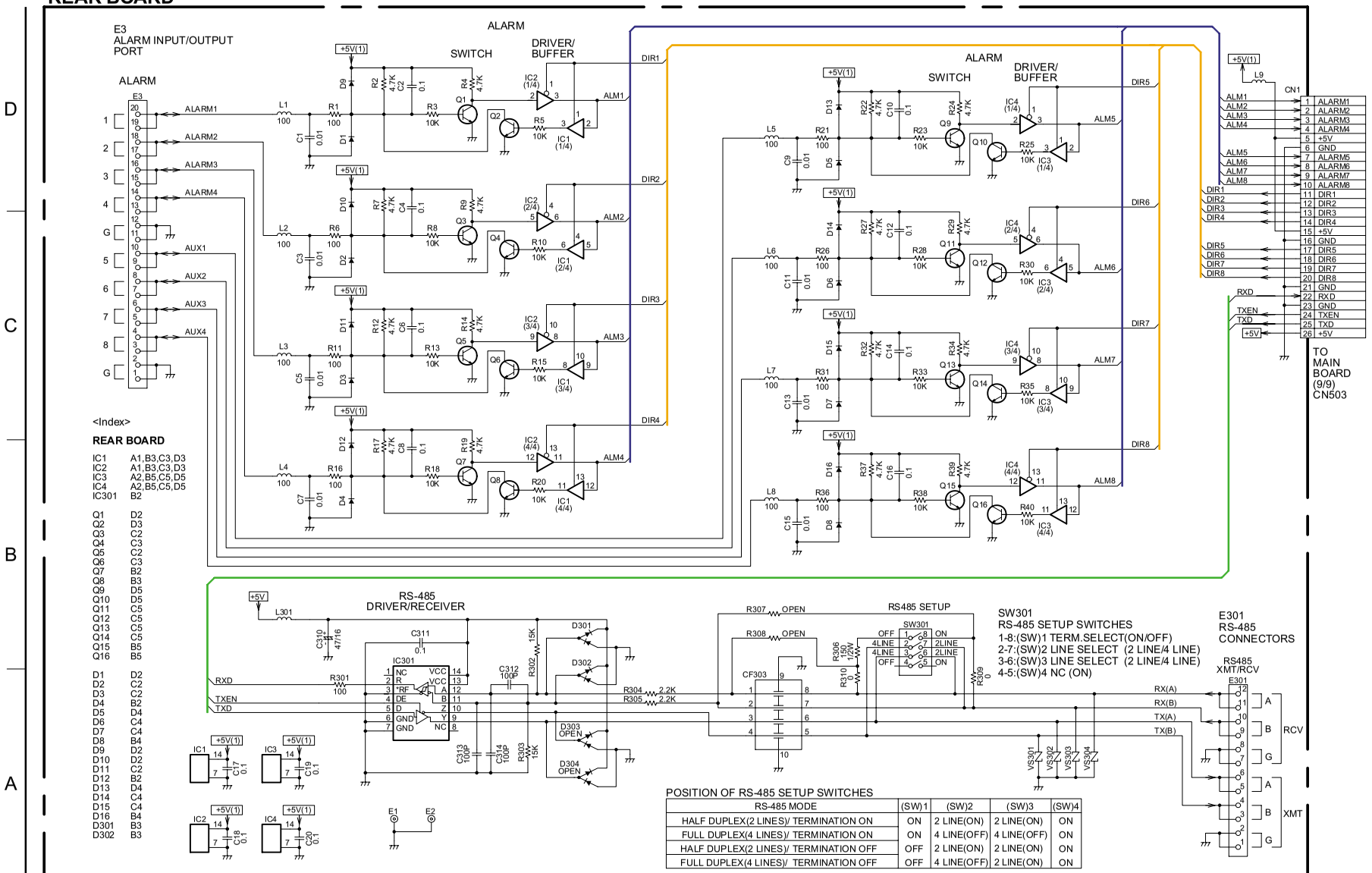
<Index>

FRONT BOARD

IC1	A4	D1	A1	D6	A1	D11	A1
IC2	A4	D2	A1	D7	A1	D12	A1
		D3	A4	D8	A1	D13	A1
		D4	A1	D9	A1	D14	A4
		D5	A1	D10	A1	D15	A2

SCHEMATIC DIAGRAM OF REAR BOARD

REAR BOARD



<Index>

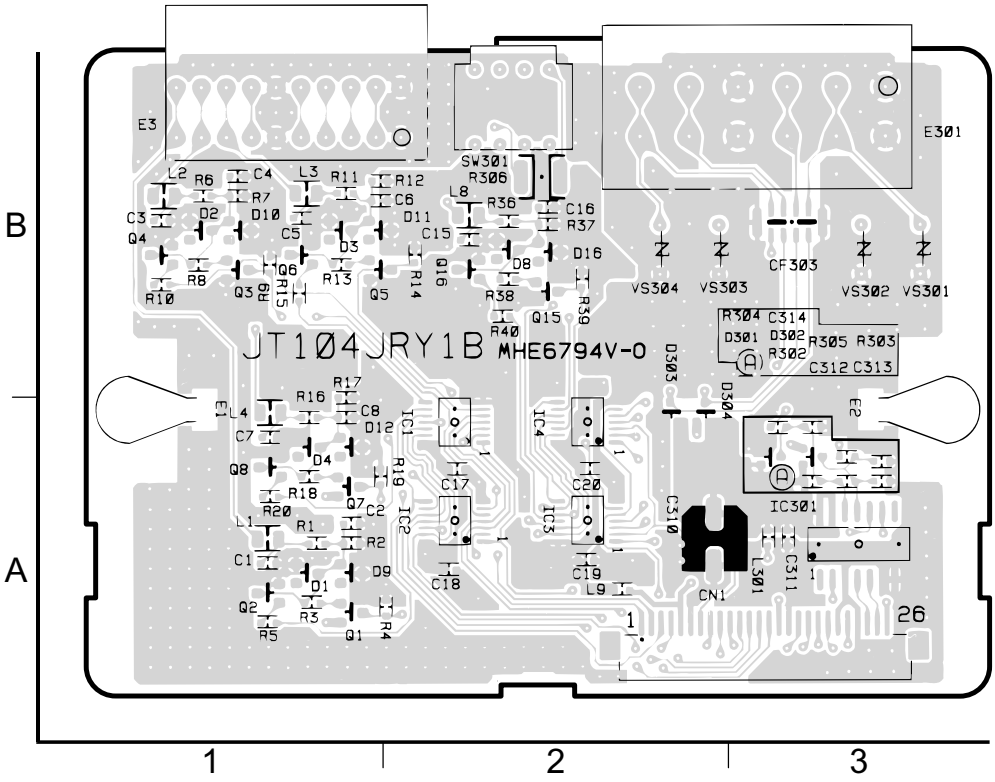
REAR BOARD

IC1	A1,B3,C3,D3
IC2	A1,B3,C3,D3
IC3	A2,B5,C5,D5
IC4	A2,B5,C5,D5
IC301	B2
Q1	D2
Q2	D3
Q3	C2
Q4	C3
Q5	C2
Q6	C3
Q7	B2
Q8	B3
Q9	D5
Q10	D5
Q11	C5
Q12	C5
Q13	C5
Q14	C5
Q15	B5
Q16	B5
D1	D2
D2	C2
D3	C2
D4	B2
D5	D4
D6	C4
D7	C4
D8	B4
D9	D2
D10	D2
D11	C2
D12	B2
D13	D4
D14	C4
D15	C4
D16	B4
D301	B3
D302	B3

POSITION OF RS-485 SETUP SWITCHES				
RS-485 MODE	(SW)1	(SW)2	(SW)3	(SW)4
HALF DUPLEX(2 LINES)/ TERMINATION ON	ON	2 LINE(ON)	2 LINE(ON)	ON
FULL DUPLEX(4 LINES)/ TERMINATION ON	ON	4 LINE(OFF)	4 LINE(OFF)	ON
HALF DUPLEX(2 LINES)/ TERMINATION OFF	OFF	2 LINE(ON)	2 LINE(ON)	ON
FULL DUPLEX(4 LINES)/ TERMINATION OFF	OFF	4 LINE(OFF)	2 LINE(ON)	ON

CONDUTOR VIEW OF REAR BOARD

REAR BOARD (COMPONENT SIDE)

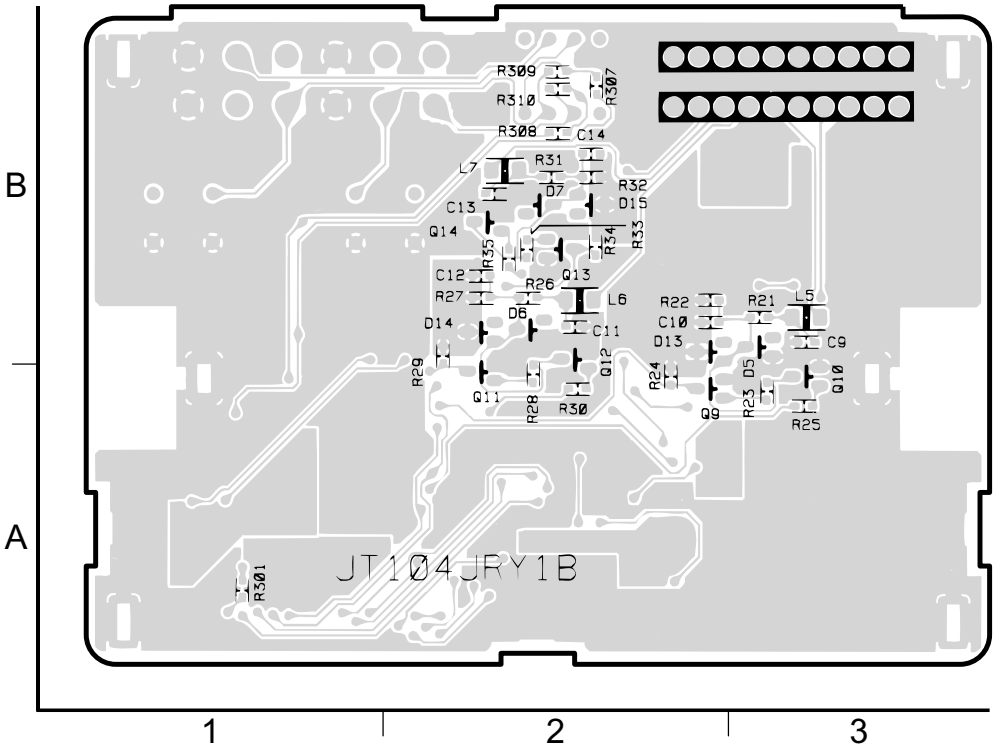


<Index>

REAR BOARD (COMPONENT SIDE)

IC1	A2
IC2	A2
IC3	A2
IC4	A2
IC301	A3
Q1	A1
Q2	A1
Q3	B1
Q4	B1
Q5	B1
Q6	B1
Q7	A1
Q8	A1
Q15	B2
Q16	B2
D1	A1
D2	B1
D3	B1
D4	A1
D8	B2
D9	A1
D10	B1
D11	B2
D12	A1
D16	B2
D301	B3
D302	B3

REAR BOARD (PATTERN SIDE)



<Index>

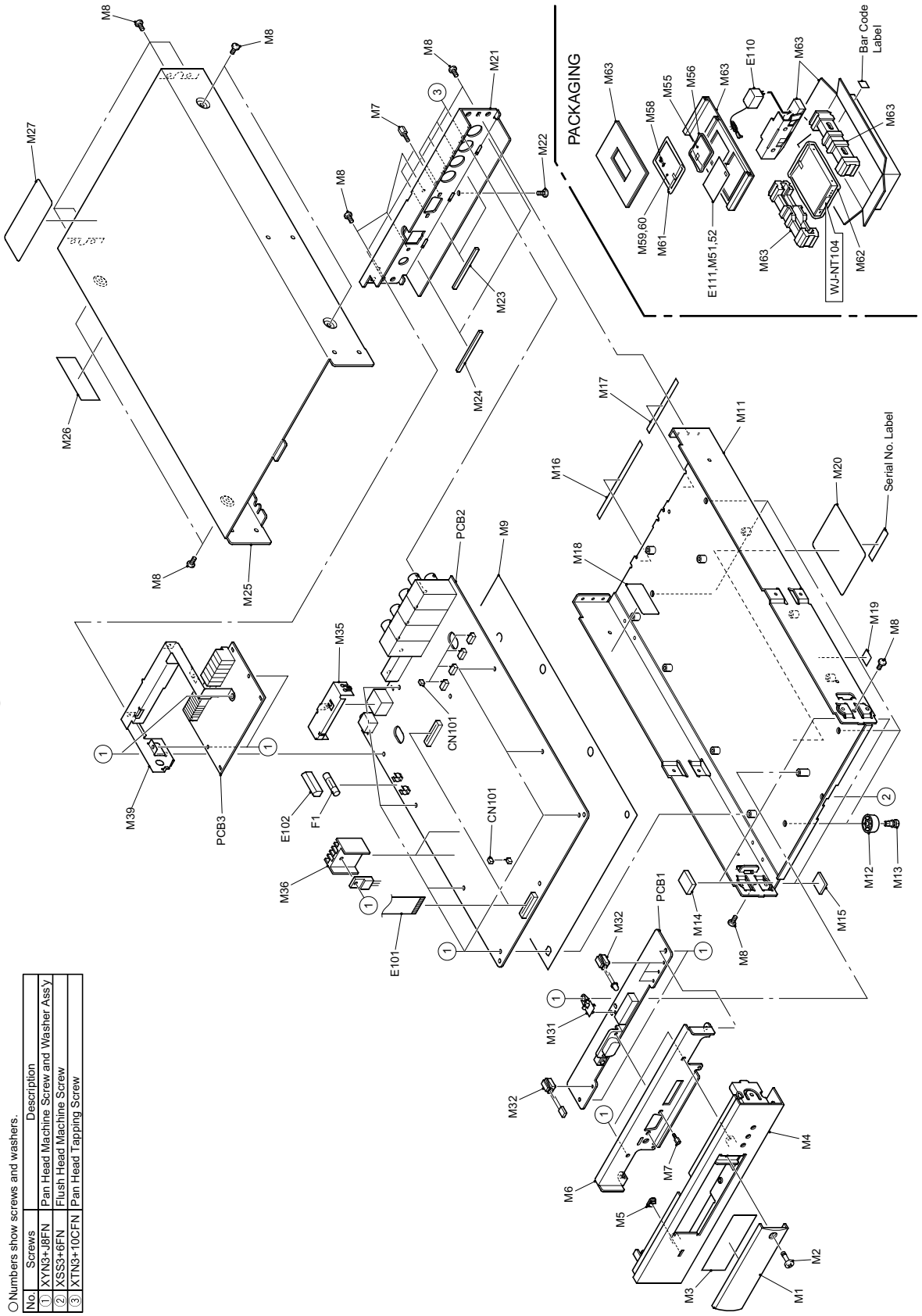
REAR BOARD (PATTERN SIDE)

Q9	A2
Q10	A3
Q11	A2
Q12	A2
Q13	B2
Q14	B2
D5	A3
D6	B2
D7	B2
D13	B2
D14	B2
D15	B2

EXPLODED VIEW

○Numbers show screws and washers.

No.	Screws	Description
①	XYN3+J8FN	Pan Head Machine Screw and Washer Ass'y
②	XSS3+6FN	Flush Head Machine Screw
③	XTN3+10CFN	Pan Head Tapping Screw



REPLACEMENT PARTS LIST

Important Notice

1. Components identified by " ⚠ " mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
2. RTL : Retention Time Limited (No longer available after discontinuing product).

REF. NO.	PART NO.	DESCRIPTION
MISCELLANEOUS		
F1 ⚠	K5D122BK0002	Current Fuse 1.25A 250V for Main Board
CN101	K1LB02A00032	2-pin Short Connector (X5) for Main Board
E101	K1PZ26Z00001	Flat Cable (X2)
E102	YW840522	Fuse Cover
M1	YWV5DA1130A3	Front Cover
M2	YWA1AB0255A4	Standard Screw for Front Cover
M3	YWV7SA4053A4	MODE Setup Label
M4	V9AB2618A2	Front Panel Ass'y
M5	YWA2EA0055A4	LED Guide
M6	YWV2SB4603A3	Front Board Mounting Angle
M7	K1ZZ00001182	Special Screw (X4)
M8	YWA1AA0270A4	Binding Head Machine Screw
M9 ⚠	V2PB1176A2	Insulator Paper
M11	V2KC1223A1	Main Chassis
M12	YWV5LA0067A4	Rubber Foot (X4)
M13	YWA2LA0070A4	Rubber Foot Joint (X4)
M14	V2FA1360A4	Cushion A (X2)
M15	V2FA1361A4	Cushion B (X2)
M16	V2FC1293A4	Cushion C
M17	V2FD1293A4	Cushion D
M18	YWV7MA0120A4	Fuse Replacement Label
M19	YWS7SA2104A4	Label
M20 ⚠	V7QA5746A4	Main Label
M21	V5WA2719A2	Rear Panel
M22	YWV1AA1074A4	Standard Screw for Rear Panel
M23	V2FB1361A4	Cushion E (X2)
M24	V2FC1361A4	Cushion F (X2)
M25	V5EA2338B1	Upper Cover
M26 ⚠	YFV7MB0099A4	Screw Caution Label
M27 ⚠	YWV7SA4046A4	RS-485 Setup Label

REF. NO.	PART NO.	DESCRIPTION	
FRONT BOARD			
PCB1(RTL)	JT104EKY2A	Printed Circuit Board Ass'y	
IC1	C1DB00000246	IC	
IC2	YWTC7S04FUL	IC	
D1,2	LN39GPP	LED	
D3	LN342GPH5	LED	
D4-14	B0ADCC000004	Diode	
D15	LN39GPP	LED	
R1-4	ERJ3GEYJ681V	Carbon	680 ohms 1/16W
Z1-3	YWMNR14EJ103	Block Resistor	10K ohms
C1-4	F1H1C104A001	Ceramic	0.1 µF
C5	EEVHB1H2R2R	Electrolytic	2.2 µF 50V
C7	MCUV1E104ZFV	Ceramic	0.1 µF
C8	EEVHP1HR22R	Electrolytic	0.22 µF 50V
C10	MCUV1E104ZFV	Ceramic	0.1 µF
L1	J0JDC0000015	Coil	
SW1	YWA6DR0100	Dip Switch	
SW2	YWB3F3122	Push Switch	
CF1,2	YWNFA41R222T	Ceramic Filter	
CN1	YW528082690	26-pin Connector	
CN2	YWJHEY9P1A3G	9-pin Connector	
E1,2	YWMEP1866	Earth Terminal	
M31	YWV4JA1101A4	Earth Spring	
M32	YWA3CA0052A4	LED Holder (X4)	
MAIN BOARD			
PCB2(RTL)	V0EA1319AN	Printed Circuit Board Ass'y	
IC1	C3ABMG000037	IC	
IC2	C1AB00000180	IC	
IC3	C0JBAZ000757	IC	
IC5	(See Note below.)	IC	
IC6	C2DBHG000001	IC	
IC7	C0EBH0000014	IC	
IC8	C0JBCB000037	IC	
IC9,10	C0JBAB000197	IC	
IC11	C0JBAB000175	IC	
IC12	C1ZBZ0001869	IC	
IC13	C3ABMG000037	IC	
IC15	C3FBLG000004	IC	
IC16	YWTC7S04FUL	IC	
IC17	C1DB00000242	IC	

Note: IC5 is supplied as Printed Circuit Board Ass'y (PCB2) only.

REF. NO.	PART NO.	DESCRIPTION	
IC19	YWMSM62X42BR	IC	
IC20	C0EBH0000014	IC	
IC22	C1DB00000246	IC	
IC23	74HC4538ADTE	IC	
IC24	C1AB00000179	IC	
IC38	C1DZ00000004	IC	
IC39	C3ABMG000037	IC	
IC42	C3FBLG000004	IC	
IC43	C1AB00000350	IC	
IC44	YWTC7S08FUL	IC	
IC46	C0ZBZ0000394	IC	
IC301	C0DBAMH00005	IC	
IC302	C0DBAHH00004	IC	
IC303	C0CAABG00004	IC	
IC304	C0CAADG00023	IC	
IC401-404	C1AA00000030	IC	
IC406,407	C0JBAS000083	IC	
IC408	C0JBAN000090	IC	
IC409	YW74HC04ADTE	IC	
IC501	YWUPC5022094	IC	
IC502	C1AB00000184	IC	
IC503	YWTC7S08FUL	IC	
Q1-5	2SC2412K-T46	Transistor	
Q401-420	2SC2412K-T46	Transistor	
Q421	2SA1037AKT46	Transistor	
Q501	2SC2412K-T46	Transistor	
Q502,503	B1ABBB000026	Transistor	
Q504	2SC2412K-T46	Transistor	
D1,2	LN1361CTR	LED	
D3-5	LN1261CTR	LED	
D9-11	B0JCAE000001	Diode	
D301-303	B0JCPE000004	Diode	
D401	B0ACCJ000016	Diode	
R1-3	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R4-7	ERJ3GEYJ4R7V	Carbon	4.7 ohms 1/16W
R8,9	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R11,13	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R14,16	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R18,29	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R30	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R31-34	ERJ3GEYJ681V	Carbon	680 ohms 1/16W
R35	ERJ3GEYJ102V	Carbon	1K ohms 1/16W
R36-38	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R39	ERJ3GEYJ912V	Carbon	9.1K ohms 1/16W
R40	ERJ3GEYJ392V	Carbon	3.9K ohms 1/16W
R41	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R42,43	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R44-47	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R48	ERJ3GEYJ302V	Carbon	3K ohms 1/16W
R49	ERJ3GEYJ201V	Carbon	200 ohms 1/16W
R50	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R53-55	ERJ3GEYJ512V	Carbon	5.1K ohms 1/16W
R56-58	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R59-64	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R67	ERJ3GEYJ681V	Carbon	680 ohms 1/16W

REF. NO.	PART NO.	DESCRIPTION	
R68	ERJ3GEYJ243V	Carbon	24K ohms 1/16WF
R69-72	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R74	ERJ3GEYJ152V	Carbon	1.5K ohms 1/16W
R75	ERJ3GEYJ512V	Carbon	5.1K ohms 1/16W
R76	ERJ3GEYJ202V	Carbon	2K ohms 1/16W
R77	ERJ3GEYJ621V	Carbon	620 ohms 1/16W
R78	ERJ3GEYJ684V	Carbon	680K ohms 1/16W
R79	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R80,81	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R82	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R84	ERJ3GEYJ102V	Carbon	1K ohms 1/16W
R85	ERJ3GEYJ392V	Carbon	3.9K ohms 1/16W
R86	ERJ3GEYJ102V	Carbon	1K ohms 1/16W
R87	ERJ3GEYJ511V	Carbon	510 ohms 1/16W
R88	ERJ3GEYJ751V	Carbon	750 ohms 1/16W
R89	ERJ3GEYJ750V	Carbon	75 ohms 1/16W
R108	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R113	ERJ3GEYJ111V	Carbon	110 ohms 1/16W
R114	ERJ3GEYJ271V	Carbon	270 ohms 1/16W
R115-117	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R118	ERJ3GEYJ392V	Carbon	3.9K ohms 1/16W
R126	ERJ3GEYJ474V	Carbon	470K ohms 1/16W
R127-131	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R138-141	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R143-149	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R151-157	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R158	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R159,160	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R161	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R162	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R163	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R169	ERJ3GEYJ510V	Carbon	51 ohms 1/16W
R195,196	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R199	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R200,201	ERJ3GEYJ220V	Carbon	22 ohms 1/16W
R208	ERJ3GEYJ106V	Carbon	10M ohms 1/16W
R209-211	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R213	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R215	ERJ3GEYJ102V	Carbon	1K ohms 1/16W
R220-223	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R225,226	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R227	ERJ3GEYJ104V	Carbon	100K ohms 1/16W
R228	ERJ3GEYJ204V	Carbon	200K ohms 1/16W
R232,235	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R238	ERJ12Y0R00H	Carbon	0 ohm 1/2W
R239-241	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R243	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R301	ERJ3GEYJ132V	Carbon	1.3K ohms 1/16W
R304	ERJ3GEYJ822V	Carbon	8.2K ohms 1/16W
R305	ERJ3GEYJ301V	Carbon	300 ohms 1/16W
R401	ERJ3GEYJ430V	Carbon	43 ohms 1/16W
R404	ERJ3GEYJ680V	Carbon	68 ohms 1/16W
R405	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R406	ERJ3GEYJ102V	Carbon	1K ohms 1/16W
R407	ERJ3GEYJ222V	Carbon	2.2K ohms 1/16W

REF. NO.	PART NO.	DESCRIPTION	
R408	ERJ3GEYJ152V	Carbon	1.5K ohms 1/16W
R409	ERJ3GEYJ471V	Carbon	470 ohms 1/16W
R410	ERJ3GEYJ682V	Carbon	6.8K ohms 1/16W
R412	ERJ3GEYJ333V	Carbon	33K ohms 1/16W
R413	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R414	ERJ3GEYJ682V	Carbon	6.8K ohms 1/16W
R415	ERJ3GEYJ392V	Carbon	3.9K ohms 1/16W
R416	ERJ3GEYJ102V	Carbon	1K ohms 1/16W
R417	ERJ3GEYJ430V	Carbon	43 ohms 1/16W
R420	ERJ3GEYJ680V	Carbon	68 ohms 1/16W
R421	ERJ3GEYJ222V	Carbon	2.2K ohms 1/16W
R422	ERJ3GEYJ152V	Carbon	1.5K ohms 1/16W
R423	ERJ3GEYJ471V	Carbon	470 ohms 1/16W
R424	ERJ3GEYJ682V	Carbon	6.8K ohms 1/16W
R426	ERJ3GEYJ333V	Carbon	33K ohms 1/16W
R427	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R428	ERJ3GEYJ682V	Carbon	6.8K ohms 1/16W
R429	ERJ3GEYJ392V	Carbon	3.9K ohms 1/16W
R430	ERJ3GEYJ102V	Carbon	1K ohms 1/16W
R431	ERJ3GEYJ430V	Carbon	43 ohms 1/16W
R434	ERJ3GEYJ680V	Carbon	68 ohms 1/16W
R435	ERJ3GEYJ222V	Carbon	2.2K ohms 1/16W
R436	ERJ3GEYJ152V	Carbon	1.5K ohms 1/16W
R437	ERJ3GEYJ471V	Carbon	470 ohms 1/16W
R438	ERJ3GEYJ682V	Carbon	6.8K ohms 1/16W
R440	ERJ3GEYJ333V	Carbon	33K ohms 1/16W
R441	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R442	ERJ3GEYJ682V	Carbon	6.8K ohms 1/16W
R443	ERJ3GEYJ392V	Carbon	3.9K ohms 1/16W
R444	ERJ3GEYJ102V	Carbon	1K ohms 1/16W
R445	ERJ3GEYJ430V	Carbon	43 ohms 1/16W
R448	ERJ3GEYJ680V	Carbon	68 ohms 1/16W
R449	ERJ3GEYJ222V	Carbon	2.2K ohms 1/16W
R450	ERJ3GEYJ152V	Carbon	1.5K ohms 1/16W
R451	ERJ3GEYJ471V	Carbon	470 ohms 1/16W
R452	ERJ3GEYJ682V	Carbon	6.8K ohms 1/16W
R454	ERJ3GEYJ333V	Carbon	33K ohms 1/16W
R455	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R456	ERJ3GEYJ682V	Carbon	6.8K ohms 1/16W
R457	ERJ3GEYJ392V	Carbon	3.9K ohms 1/16W
R458	ERJ3GEYJ102V	Carbon	1K ohms 1/16W
R459	ERJ3GEYJ471V	Carbon	470 ohms 1/16W
R460-463	ERJ3GEYJ750V	Carbon	75 ohms 1/16W
R468-471	ERJ3GEYJ750V	Carbon	75 ohms 1/16W
R500,501	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R503	ERJ3GEYJ682V	Carbon	6.8K ohms 1/16W
R504	ERJ3GEYJ223V	Carbon	22K ohms 1/16W
R505	ERJ3GEYJ152V	Carbon	1.5K ohms 1/16W
R506,507	ERJ3GEYJ102V	Carbon	1K ohms 1/16W
R509	ERJ3GEYJ562V	Carbon	5.6K ohms 1/16W
R510	ERJ3EKF1001V	Carbon	1K ohms
R511	ERJ3GEYJ132V	Carbon	1.3K ohms 1/16W
R512	ERJ3GEYJ391V	Carbon	390 ohms 1/16W
R513	ERJ3GEYJ362V	Carbon	3.6K ohms 1/16W
R514	ERJ3GEYJ272V	Carbon	2.7K ohms 1/16W

REF. NO.	PART NO.	DESCRIPTION	
R515	ERJ3GEYJ271V	Carbon	270 ohms 1/16W
R516	ERJ3GEYJ221V	Carbon	220 ohms 1/16W
R517	ERJ3GEYJ332V	Carbon	3.3K ohms 1/16W
R518,519	ERJ3GEYJ102V	Carbon	1K ohms 1/16W
R520	ERJ3GEYJ331V	Carbon	330 ohms 1/16W
R525	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R526	ERJ3GEYJ152V	Carbon	1.5K ohms 1/16W
R527	ERJ3GEYJ622V	Carbon	6.2K ohms 1/16W
R528	ERJ3GEYJ222V	Carbon	2.2K ohms 1/16W
R530,531	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R533	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R534	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
Z1-4	YWMNR14EJ220	Block Resistor	22 ohms
Z5-14	YWMNR14EJ103	Block Resistor	10K ohms
Z15-18	D1H810140001	Block Resistor	100 ohms
Z19-24	YWMNR14EJ220	Block Resistor	22 ohms
Z25	YWMNR14EJ103	Block Resistor	10K ohms
Z26-29	D1H810140001	Block Resistor	100 ohms
Z34-42	YWMNR14EJ103	Block Resistor	10K ohms
Z44-47	D1H810140001	Block Resistor	100 ohms
Z50-57	YWMNR14EJ220	Block Resistor	22 ohms
Z58-61	D1H810140001	Block Resistor	100 ohms
Z62-77	YWMNR14EJ220	Block Resistor	22 ohms
Z88,89	YWMNR14EJ103	Block Resistor	10K ohms
Z90-93	YWMNR14EJ220	Block Resistor	22 ohms
C1	MCUV1E104ZFV	Ceramic	0.1 µF
C2	F3K1A1060001	Tantalum	10 µF 10V
C3,4	MCUV1E104ZFV	Ceramic	0.1 µF
C5	F3K1A1060001	Tantalum	10 µF 10V
C6	MCUV1E104ZFV	Ceramic	0.1 µF
C7	F3K1A1060001	Tantalum	10 µF 10V
C8,10	MCUV1E104ZFV	Ceramic	0.1 µF
C11	F1H1C104A001	Ceramic	0.1 µF
C12	MCUV1E104ZFV	Ceramic	0.1 µF
C13	EEVHB1H1R0R	Electrolytic	1 µF 50V
C14-16	MCUV1E104ZFV	Ceramic	0.1 µF
C17	F3K1A1060001	Tantalum	10 µF 10V
C18	MCUV1E104ZFV	Ceramic	0.1 µF
C19	F1H1H471A650	Ceramic	470 pF
C20	F1H1C104A001	Ceramic	0.1 µF
C21,22	MCUV1E104ZFV	Ceramic	0.1 µF
C23	F3K1A1060001	Tantalum	10 µF 10V
C24	MCUV1E104ZFV	Ceramic	0.1 µF
C25	F1H1H103A190	Ceramic	0.01 µF
C26	MCUV1E104ZFV	Ceramic	0.1 µF
C27	F3K1A1060001	Tantalum	10 µF 10V
C28	MCUV1E104ZFV	Ceramic	0.1 µF
C29	F3K1A1060001	Tantalum	10 µF 10V
C30	MCUV1E104ZFV	Ceramic	0.1 µF
C31	F3K1A1060001	Tantalum	10 µF 10V
C32	MCUV1E104ZFV	Ceramic	0.1 µF
C33,34	F1H1H330A231	Ceramic	33 pF
C35-45	F1H1H103A190	Ceramic	0.01 µF
C47,48	MCUV1E104ZFV	Ceramic	0.1 µF
C49	F1H1C104A001	Ceramic	0.1 µF

REF. NO.	PART NO.	DESCRIPTION	
C50,51	MCUV1E104ZFV	Ceramic	0.1 µF
C52-55	F1H1C104A001	Ceramic	0.1 µF
C57	EEVHP1HR22R	Electrolytic	0.22 µF 50V
C58	MCUV1E104ZFV	Ceramic	0.1 µF
C60	EEVHB1H2R2R	Electrolytic	2.2 µF 50V
C61	EEVHB1C220R	Electrolytic	2.2 µF 16V
C62	EEVHB1C100R	Electrolytic	10 µF 16V
C63,64	F1H1C104A001	Ceramic	0.1 µF
C65	F1H1H5110001	Ceramic	510 pF
C66,68	MCUV1E104ZFV	Ceramic	0.1 µF
C69	F1H1C104A001	Ceramic	0.1 µF
C70,83	MCUV1E104ZFV	Ceramic	0.1 µF
C107,108	F3K1A1060001	Tantalum	10 µF 10V
C109,112	MCUV1E104ZFV	Ceramic	0.1 µF
C113	F3K1A1060001	Tantalum	10 µF 10V
C116	MCUV1E104ZFV	Ceramic	0.1 µF
C118,119	F1H1H160A004	Ceramic	16 pF
C120-122	MCUV1E104ZFV	Ceramic	0.1 µF
C123	F3K1A1060001	Tantalum	10 µF 10V
C124	MCUV1E104ZFV	Ceramic	0.1 µF
C125	F3K1A1060001	Tantalum	10 µF 10V
C128	F1H1H103A190	Ceramic	0.01 µF
C131	MCUV1E104ZFV	Ceramic	0.1 µF
C132,133	F1H1C104A001	Ceramic	0.1 µF
C134,135	F1H1H200A650	Ceramic	20 pF
C136	MCUV1E104ZFV	Ceramic	0.1 µF
C139-142	F1H1H560A004	Ceramic	56 pF
C143,144	F3K1A1060001	Tantalum	10 µF 10V
C301,302	EEUFC1H121	Electrolytic	120 µF 50V
C303	EEUFC1E222S	Electrolytic	2200 µF 25V
C304	EEUFC1E121	Electrolytic	120 µF 25V
C305	EEUFC1E102	Electrolytic	1000 µF 25V
C306	EEUFC1C121	Electrolytic	120 µF 16V
C307	ECST1VY334R	Tantalum	0.33 µF 35V
C308	ECST1AC226R	Tantalum	22 µF 10V
C309	EEUFC1C121	Electrolytic	120 µF 16V
C310	F1H1C104A001	Ceramic	0.1 µF
C311	ECST1VY334R	Tantalum	0.33 µF 35V
C312	ECST1AC226R	Tantalum	22 µF 10V
C313	EEUFC1C121	Electrolytic	120 µF 16V
C314	F1H1C104A001	Ceramic	0.1 µF
C315-319	EEUFC1E332S	Electrolytic	3300 µF 25V
C401	F1H1E223A011	Ceramic	0.22 µF
C402	F1H1C104A001	Ceramic	0.1 µF
C403	EEVHP1A100R	Electrolytic	10 µF 10V
C404	EEVHP1C100R	Electrolytic	10 µF 16V
C405	EEVHB1C101P	Electrolytic	100 µF 16V
C406	MCUV1E104ZFV	Ceramic	0.1 µF
C407	F1H1E223A011	Ceramic	0.22 µF
C408	F1H1C104A001	Ceramic	0.1 µF
C409	EEVHP1A100R	Electrolytic	10 µF 10V
C410	EEVHP1C100R	Electrolytic	10 µF 16V
C411	EEVHB1C101P	Electrolytic	100 µF 16V
C412	F1H1E223A011	Ceramic	0.22 µF
C413	F1H1C104A001	Ceramic	0.1 µF

REF. NO.	PART NO.	DESCRIPTION	
C414	EEVHP1A100R	Electrolytic	10 µF 10V
C415	EEVHP1C100R	Electrolytic	10 µF 16V
C416	EEVHB1C101P	Electrolytic	100 µF 16V
C417	F1H1E223A011	Ceramic	0.22 µF
C418	F1H1C104A001	Ceramic	0.1 µF
C419	EEVHP1A100R	Electrolytic	10 µF 10V
C420	EEVHP1C100R	Electrolytic	10 µF 16V
C421	EEVHB1C101P	Electrolytic	100 µF 16V
C422-424	MCUV1E104ZFV	Ceramic	0.1 µF
C425	EEVHB1A471P	Electrolytic	470 µF 10V
C426	EEVHB1C470P	Electrolytic	47 µF 16V
C427	EEVHB1A471P	Electrolytic	470 µF 10V
C428	EEVHB1C470P	Electrolytic	47 µF 16V
C429	EEVHB1A471P	Electrolytic	470 µF 10V
C430	EEVHB1C470P	Electrolytic	47 µF 16V
C431	EEVHB1A471P	Electrolytic	470 µF 10V
C432	EEVHB1C470P	Electrolytic	47 µF 16V
C433-436	EEVHB1C101P	Electrolytic	100 µF 16V
C437	MCUV1E104ZFV	Ceramic	0.1 µF
C439	EEVHB1C220R	Electrolytic	22 µF 16V
C501	MCUV1E104ZFV	Ceramic	0.1 µF
C502	EEVHB1C220R	Electrolytic	22 µF 16V
C503	MCUV1E104ZFV	Ceramic	0.1 µF
C504,505	EEVHB1C220R	Electrolytic	22 µF 16V
C506	F1H1H101A004	Ceramic	100 pF
C507	MCUV1E104ZFV	Ceramic	0.1 µF
C508	F1H1H201A004	Ceramic	200 pF
C509	EEVHB1E4R7R	Electrolytic	4.7 µF 25V
C510	F1H1H4R9A243	Ceramic	4.9 pF
C511	F1H1H101A004	Ceramic	100 pF
C512	EEVHB1C220R	Electrolytic	22 µF 16V
C513,514	F1H1H220A004	Ceramic	22 pF
C515	EEVHB1C220R	Electrolytic	22 µF 16V
C516	MCUV1E104ZFV	Ceramic	0.1 µF
C519	F1H1H331A650	Ceramic	330 pF
C521	F1H1H270A004	Ceramic	27 pF
C522	F1H1H390A004	Ceramic	39 pF
C523	F1H1H101A004	Ceramic	100 pF
C524	F1H1H560A004	Ceramic	56 pF
C525	MCUV1H470JCV	Ceramic	47 pF
C526	F1H1H680A004	Ceramic	68 pF
C529	MCUV1E104ZFV	Ceramic	0.1 µF
C530	EEVHB1C470P	Electrolytic	470 µF 16V
C531-538	MCUV1E104ZFV	Ceramic	0.1 µF
L1,2	J0JDC0000015	Coil	
L4-10	J0JDC0000015	Coil	
L16,17	J0JDC0000015	Coil	
L19,27	J0JDC0000015	Coil	
L31-35	J0JDC0000015	Coil	
L37,38	J0JDC0000015	Coil	
L43,45	J0JDC0000015	Coil	
L301	ELC15E151	Coil	
L302	G1C220M00011	Coil	
L303	ELC15E151	Coil	
L304	G1C220M00011	Coil	

REF. NO.	PART NO.	DESCRIPTION
L305,306	YWS100671470	Coil
L401-408	J0JDC0000016	Coil
L409-422	J0JDC0000015	Coil
L502	NL3225T2R7K	Coil
L503	G1C100J00001	Coil
L504	YWBLM11P300S	Coil
L505-507	J0JDC0000015	Coil
SW4,6	K0D144A00010	Dip Switch
SW9	K0D661A00002	Slide Switch
X1	H0J180500005	Crystal Oscillator
X2	H0J200500008	Crystal Oscillator
X3	H1A7374B0001	Crystal Oscillator
X5	H1A6754B0001	Crystal Oscillator
X7	H0J135500002	Crystal Oscillator
X501	H1A1435B0003	Crystal Oscillator
CF1	G5BYC0000002	LC Filter
CF2,3	YWNFA41R222T	Ceramic Filter
CF4	YW4FW8052	LC Filter
CF5	YW4FW8053	LC Filter
CF302	J0JHA0000004	LC Filter
CN5	K2LC108B0008	8-pin Connector
CN7	YWJHEY9P1A3G	9-pin Connector
CN11	K1KA02A00121	2-pin Connector
CN16	YW528082690	26-pin Connector
CN401-404	YWP2325	Connector (BNC)
CN406-409	RFH082TD1130	8-pin Connector
CN503	YW528082690	26-pin Connector
BAT1	YWVL2330-1HF	Storage Battery
JK301	K2ED2B000002	Jack
E1-8	YWMEP1866	Earth Terminal
E305,306⚠	K3GE1BB00004	Fuse Holder
E307	YWMEP1866	Earth Terminal
M35	V2SA5039A3	Dip Switch Mounting Angle
M36	YWV7DA0045A4	Heat Sink

REAR BOARD

PCB3 (RTL)	JT104EKY1A	Printed Circuit Board Ass'y	
IC1	C0JBAZ000596	IC	
IC2	C0JBAZ000595	IC	
IC3	C0JBAZ000596	IC	
IC4	C0JBAZ000595	IC	
IC301	SN75ALS181NS	IC	
Q1-16	2SC2412K-T46	Transistor	
D1-16	B0ACCJ000016	Diode	
D301,302	B0ADCC000004	Diode	
VS301-304	ERZV07D680	Varistor	
R1	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R2	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R3	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R4	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R5	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R6	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R7	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R8	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R9	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R10	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R11	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R12	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R13	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R14	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R15	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R16	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R17	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R18	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R19	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R20	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R21	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R22	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R23	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R24	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R25	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R26	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R27	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R28	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R29	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R30	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R31	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R32	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R33	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R34	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R35	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R36	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R37	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R38	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R39	ERJ3GEYJ472V	Carbon	4.7K ohms 1/16W
R40	ERJ3GEYJ103V	Carbon	10K ohms 1/16W
R301	ERJ3GEYJ101V	Carbon	100 ohms 1/16W
R302,303	ERJ3GEYJ153V	Carbon	15K ohms 1/16W
R304,305	ERJ3GEYJ222V	Carbon	2.2K ohms 1/16W
R306	ERJ12YJ151H	Carbon	150 ohms 1/2W
R309,310	ERJ3GEY0R00	Carbon	0 ohm 1/16W
C1	F1H1H103A190	Ceramic	0.01 µF
C2	F1H1C104A001	Ceramic	0.1 µF
C3	F1H1H103A190	Ceramic	0.01 µF
C4	F1H1C104A001	Ceramic	0.1 µF
C5	F1H1H103A190	Ceramic	0.01 µF
C6	F1H1C104A001	Ceramic	0.1 µF
C7	F1H1H103A190	Ceramic	0.01 µF
C8	F1H1C104A001	Ceramic	0.1 µF
C9	F1H1H103A190	Ceramic	0.01 µF
C10	F1H1C104A001	Ceramic	0.1 µF
C11	F1H1H103A190	Ceramic	0.01 µF
C12	F1H1C104A001	Ceramic	0.1 µF
C13	F1H1H103A190	Ceramic	0.01 µF
C14	F1H1C104A001	Ceramic	0.1 µF
C15	F1H1H103A190	Ceramic	0.01 µF

REF. NO.	PART NO.	DESCRIPTION	
C16	F1H1C104A001	Ceramic	0.1 µF
C17-20	MCUV1E104ZFV	Ceramic	0.1 µF
C310	EEVHB1C470P	Electrolytic	47 µF 16V
C311	MCUV1E104ZFV	Ceramic	0.1 µF
C312-314	F1H1H101A004	Ceramic	100 pF
L1-8	ELJFC101JF	Coil	100 µH
L9	YWBLM11P300S	Coil	
L301	J0JDC0000015	Coil	
SW301	K0C411B00001	Dip Switch	
CF303	YWNFA41R222T	Ceramic Filter	
CN1	K1MN26B00058	26-pin Connector	
E1,2	YWMEP1866	Earth Terminal	
E3	K4AC10B00004	20-pin Terminal	
E301	YWML800H06P	12-pin Terminal	
M39	V2SA5038A3	Mounting Angle (RS-485)	

REF. NO.	PART NO.	DESCRIPTION
ACCESSORY PARTS / PACKAGING PARTS		
E110 ⚠	L9ZZ00000133	AC Adapter
E111	JT104SC101	Utility Software (FD)
M51	V8RA1273A2	Bag for Utility Software (FD)
M52	YWT10X10C03	Polyethylene Bag(X2) for Utility Software (FD)
M55 ⚠	V8QA5680AN	CD-ROM Ass'y
M56	YWV8EA1045A4	Aircap Bag for CD-ROM Ass'y
M58	YWX43	Cord Clamp
M59 ⚠	V8QA5681AN	Operating Instructions
M60	V8RA1207AN	Printed Matters
M61	PE26X40C05B	Polyethylene Bag
M62	PE35X50C05B	Polyethylene Bag
M63	V9CA4373AN	Packaging Ass'y